

NUCLEAR TRAINING DEPARTMENT
ADMINISTRATIVE JOB PERFORMANCE MEASURE

TITLE: VERIFY REACTOR COOLANT INVENTORY SURVIELLANCE

JPM NO.: NRC A1

REVISION: 1

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: VERIFY REACTOR COOLANT INVENTORY SURVIELLANCE

JPM No.: NRC A1

Rev. No.: 1

STP Task: T32400, Perform RC System Inventory Balance

STP Objective: CRO32400, Perform RC System Inventory Balance in accordance with OPSP03-RC-0006.

**Related
K/A Reference:** G2.1.1.18 [2.9/3.0] Ability to make accurate, clear, and concise logs, records, status boards, and reports.

References: OPSP03-RC-0006, Rev. 16, REACTOR COOLANT INVENTORY. Technical Specification 3.4.6.2

**Task Normally
Completed By:** RO

**Method
of Testing:** Actual Performance

**Location
of Testing:** N/A

**Time
Critical Task:** NO

**Validation
Time:** 40 minutes

**Required Materials
(Tools/Equipment):** Calculator

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU HAVE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 1 has been operating at 100% steady-state power for 30 days. You are the Extra Reactor Operator. 0PSP03-RC-0006, Reactor Coolant Inventory has just been completed by the Primary Reactor Operator due to an unexplained downward trend in the VCT on the Integrated Computer System (ICS) Inventory screen. A one-hour inventory was performed manually as directed by the Shift Supervisor.

Additional information:

- The total Primary to Secondary leakage as identified by Chemistry is < 5 gpd (gallons per day).
- ICS sump level monitoring is not available.
- Previous identified leakage was 0.187 gpm
- Previous unidentified leakage was 0.134
- There is NO Uncontained Identified RCS leakage
- Step 5.16, Comparison of RT-8011 alarm setpoints to RCB Purge Notification Form, will be done at a later time. Leave blank for now.

INITIATING CUE:

You are directed to perform a second verification of the enclosed RCS Inventory surveillance for technical accuracy and procedural compliance. THREE errors or omissions have been inserted, one Critical and two Non-Critical. As a MINIMUM, you are to IDENTIFY the Critical error, and one of the two Non-Critical errors. Of the six data columns on Data Sheet -1, the START and STOP data column do not contain errors. All **other** columns **may** contain errors. Editorial errors such as spelling, grammar, or punctuation are unintentional and DO NOT count.

Additionally, individual errors that are carried forward by math and/or data manipulation are still considered a single error (i.e. the original error does not multiply every time that error is used).

JOB PERFORMANCE MEASURE INFORMATION SHEET

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

The applicant correctly identifies the Critical Error and one of two Non-Critical errors in the faulted surveillance package.

HANDOUTS:

- 1) Student working copy of 0PSP03-RC-0006, REACTOR COOLANT INVENTORY.
- 2) Plant Curve 10.8 - Pressurizer Relief Tank, from Unit 1 Plant Curve Book.
- 3) Plant Curve 10.9 - RC Drain Tank, from Unit 1 Plant Curve Book.

NOTES:

- 1) The Evaluator is provided with an ANSWER KEY which is appropriately marked ("KEY"). The location of inserted errors is also mentioned in the body of this JPM. The evaluator shall not handout any page(s) marked as "KEY" to the applicant.
- 2) The ANSWER KEY will be marked so as to indicate the location and nature of the errors.

JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Obtain completed RCS Inventory surveillance.

Standard:

The applicant obtains a copy of the completed 0PSP03-RC-0006, Reactor Coolant Inventory.

Comment:

Provide applicant the student copy of the Reactor Coolant Inventory surveillance and Plant Curve Book Figures 10.8 and 10.9.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Review RCS Inventory surveillance.

Standard:

The applicant reviews the RCS Inventory surveillance for technical accuracy and procedural compliance.

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 3(C)

Locate and discuss errors located within the surveillance.

Standard:

The applicant locates the Critical error and one of two Non-Critical errors as listed below:

- 1) The result for PRZR/RCS Pressure deviation for the time period was incorrectly calculated as -5 instead of -3. This error does not impact starting or acceptance criteria and is **Non-Critical**. [Error located on Data Sheet 1, Page 2 of 2]*
- 2) The Correction Factor (CF) for PRZR Level was blank on Data Sheet 1. The CF was correctly calculated earlier on procedure step 5.6 (page 4 of 13), and it was correctly used to obtain the "Result". It did not get transposed onto the Data Sheet in the Correction Factor column. This error is **Non-Critical**. [Error located on Data Sheet 1, Page 2 of 2]*
- 3) The performer incorrectly divided the GROSS Leakage by the wrong amount of time (120 minutes instead of 60 minutes) resulting in the GROSS and UNIDENTIFIED Leakage rates being calculated at half of their actual values. Because the UNIDENTIFIED leakage rate was incorrectly calculated to be below the Technical Specification Acceptance Criteria when it was unacceptably high, this error is considered **Critical**. [Error located on Procedure step 5.8.2, Page 7 of 20]*

Comment:

Technical Specification 3.4.6.2 requires RCS leakage to be limited to:

- 1) No PRESSURE BOUNDARY LEAKAGE
- 2) 1 gpm UNIDENTIFIED LEAKAGE
- 3) 150 gallons/day primary-secondary leakage through any one S/G.
- 4) 10 gpm IDENTIFIED leakage from RCS, and
- 5) 0.5 gpm leakage per nominal inch...RCS pressure Isolation Valves.

Cue:

Notes:

- TERMINATE THE JPM -

JPM STOP TIME _____

VERIFICATION OF COMPLETION

Job Performance Measure: VERIFY REACTOR COOLANT INVENTORY
SURVIELLANCE

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature _____

Date _____

JPM - HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU HAVE COMPLETED THE TASK

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Additional information:

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INITIATING CUE:

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Reactor Coolant Inventory			
Quality	Safety-Related	Usage: IN HAND CONTROLLING STATION	Effective Date: 03/01/07
R. Hamilton	J. C. Heil	Crew 2D	Generation Support
PREPARER	TECHNICAL	USER	COGNIZANT DEPT.

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Reactor Coolant Inventory**1.0 Purpose and Scope**

- 1.1 Provide instructions for performing a Reactor Coolant System Water Inventory Balance to determine RCS leakage and satisfy the surveillance requirements of Technical Specification Section 4.4.6.2.1.c.
- 1.2 The calculations in this procedure assume the plant is in Modes 1, 2, 3, or 4 and plant conditions reflect “**Steady State Operations**”. Performance of an inventory balance at conditions other than previously stated may yield unreliable results.
- 1.3 Provide a means for updating the Plant Computer Sump Level Monitoring System identified leakage value.
- 1.4 Provide a means to control the RT-8011 Particulate Channel Alert Alarm setpoint to aid in the detection of changes in RCS Leakage.
- 1.5 Provide a means to evaluate calculated leakage rates against administrative leakage rate criteria.

2.0 Responsibilities

- 2.1 This procedure is performed by Plant Operations.
- 2.2 The following personnel shall review this test:
 - Test Coordinator
 - Shift Supervisor
 - Division Surveillance Coordinator
- 2.3 After completion of test, routing is per OPGP03-ZE-0004 (Plant Surveillance Program), and OPGP03-ZA-0055 (Plant Surveillance Scheduling).

Reactor Coolant Inventory

3.0 Precautions and Notes

- 3.1 IF the computer program is used for data calculation, THEN the following applies:
- 3.1.1 The computer generated form may be substituted for Data Sheet 1, Leakage Rate, Page 2 of 2.
- 3.1.2 A second qualified individual SHALL sign on the PPDS cover sheet where indicated, to verify the correct transcription of data.
- 3.2 IF a manual calculation is performed, THEN a second qualified individual SHALL sign on the PPDS cover sheet where indicated, to verify the calculation is correct.
- 3.3 In Modes 1 or 2, Reactor Power SHALL be maintained in a 1% band.
- 3.4 In Modes 1, 2, or 3, a minimum of one RCP in operation is required.
- 3.5 IF performing to obtain an Identified OR Unidentified Leakage Rate, THEN VERIFY RCDT level is being maintained between 18% and 70%.
- 3.6 Diversion of letdown to Recycle Holdup Tanks will invalidate the test.
- 3.7 IF determining an Identified OR Unidentified Leak Rate, THEN the following will invalidate this test:
- 3.7.1 Draining of the RCDT or PRT
- 3.7.2 Venting, draining, or sampling any portion of the RCS, CVCS, or interconnected piping
- 3.7.3 RCS sampling may be allowed to recirculate to the VCT, however, RCS Coolant SHALL **NOT** be removed from the RCS during this test.
- 3.7.4 Opening RC-FV-3650 (PRT SPRAY ISOL) or the opening of RC-FV-3651 (RMW to PRT/RCP standpipe) with known leakage across RC-FV-3650 (Reference 8.4.2).
- 3.8 Failure to meet the acceptance criteria of the test may require entry into LCO Action Statement 3.4.6.2.
- 3.9 Any changes to this procedure requires a review of the computer program for adherence to Software Quality Assurance Standards.
- 3.10 Operation of the HHSI or LHSI pumps may invalidate the test due to potential relief valve leakage into the PRT (Reference 8.4.2).
- 3.11 Comparisons of calculated UNIDENTIFIED LEAKAGE values may differ by ± 0.120 gpm using 1-hour leakage test periods and by ± 0.060 gpm using 2-hour leakage test periods due to instrument uncertainties. (CREE 03-6687-13)

Reactor Coolant Inventory

- 3.12 To meet the leak rate measurement commitment contained in Reference 8.4.3, performance of this test using a 2-hour leakage test period is required at least once daily during applicable operating modes. This test may be performed at other times using a 1-hour leakage test period.
- 3.13 IF this test can not be performed “daily” OR the daily test is performed with less than a 2-hour leakage test period, THEN Operations Management and Licensing SHALL be notified to evaluate any impact to commitments contained in Reference 8.4.3.
- 3.14 The RT-8011 Particulate Channel Alert Alarm SHALL be set to the Notification Level value for RCB Purges provided by Chemistry on 0PCP09-HC-0001 Form 1, RCB Purge Notification Levels, **NOT** to exceed the maximum allowed setpoint of 6.00 E-07 uCi/cc per the scaling manual.
- 3.15 **“Steady State Operations”**: (Calculations performed during non-steady state conditions may **NOT** be used to satisfy Technical Specification surveillance acceptance criteria.) Technical Specification Basis (4.4.6.2.1) describes that steady state operations are required to perform a proper water inventory balance. For this procedure, **“Steady State Operations”** is defined as:
- Stable PRZR pressure as specified in Step 5.3.2.
 - Stable RCS temperature (i.e., Tave changing by < 0.5°F/hr)
 - Stable Reactor power level as specified in Step 5.3.1.
 - Stable Pressurizer and VCT levels, Charging and Letdown, and RCP Seal Injection and Seal Return flows (Note: makeup to the VCT during the test period will introduce error in the leak rate determination. Plant conditions should be established such that makeup to the VCT will not be required during the test period.)
- 3.16 Specific Unidentified Baseline Leakage Values for the respective Units are as follows:

<u>Unit</u>	<u>Baseline Unidentified Leakage Value</u>
One	0.034 gpm (CREE 07-2473-2)
Two	0.021 gpm (CREE 07-2473-2)

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Reactor Coolant Inventory			

Initials

4.0 Prerequisites

- 4.1 ENSURE the Pressurizer/Reactor Coolant System pressure is approximately 400 psig OR 2235 psig. RM
- 4.2 ENSURE “**Steady State Operations**” conditions are established. RM
- 4.3 Record the following on PPDS:
- Unit Number RM
 - Reason for Test RM

STUDENT HANDOUT

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Reactor Coolant Inventory			

Initials

5.0 Procedure

5.1 VERIFY the prerequisites are complete.

RM

5.2 RECORD START data and instrumentation on Data Sheet 1, Leakage Rate.

RM

NOTE

This test should be performed over a two hour period unless steady conditions cannot be maintained. A test period of one hour is sufficient to satisfy the surveillance test. The test period may be specified at the discretion of the Shift Supervisor.

5.3 WHEN the determined test period has elapsed, THEN perform the following:

5.3.1 VERIFY Stop time Reactor Power is within 1% of Start time Reactor Power.

RM

5.3.2 VERIFY Stop time PRZR pressure is within 10 psig of Start time PRZR pressure.

RM

5.3.3 IF Reactor Power and Pressure data are within limits above, THEN record STOP data on Data Sheet 1, Leakage Rate.

RM

5.3.4 IF Reactor Power and Pressure data are **NOT** within limits above, THEN stabilize Reactor Power and Pressure within limits.

N/A

5.3.4.1 WHEN Reactor Power and Pressure stabilize within limits, THEN record STOP data on Data Sheet 1, Leakage Rate.

N/A

5.4 DETERMINE PRT level in gallons from percent using the Plant Curve Book, Figure 10.8, Pzr Relief Tank.

RM

5.5 DETERMINE RCDT level in gallons from percent using the Plant Curve Book, Figure 10.9, RC Drain Tank.

RM

Reactor Coolant Inventory

Initials

5.6 Pressurizer level correction factor calculation:

$$68.3 + 0.023 (2235 - \frac{2232}{\text{Stop Press}} \text{ psig}) = \frac{68.369}{\text{gal/\%}}$$

RM

5.7 Temperature correction factor calculation:

5.7.1 IF pressure is approximately 400 psig AND Stop Temperature is between 240 and 400°F, THEN PERFORM the following:

$$32 + 0.147 (\frac{N/A}{\text{Stop Temp}} ^\circ\text{F} - 240) = \frac{N/A}{\text{gal/}^\circ\text{F}}$$

N/A5.7.2 IF pressure is approximately 2235 psig AND Stop Temperature is between 500 and 600°F, THEN use Addendum 1.RM

5.8 GROSS Leakage Rate calculation:

5.8.1 Sum changes in VCT, PRZR, TEMP and Makeup.

$$\frac{135.6}{\text{VCT}} \text{ gal} + \frac{-68.4}{\text{PRZR}} \text{ gal} + \frac{8.13}{\text{TEMP}} \text{ gal} + \frac{0}{\text{Makeup}} \text{ gal} = \frac{75.33}{\text{Total}} \text{ gal}$$

5.8.2 Divide the sum by the elapsed time:

$$\frac{75.33}{\text{Total}} \text{ gal} \div \frac{120}{\text{Time}} \text{ min} = \frac{.628}{\text{GROSS Leakage Rate}} \text{ gpm}$$

Reactor Coolant Inventory

Initials

5.9 Identified Leakage Rate calculation:

5.9.1 Sum data from the PRT and RCDT: RM

$$\frac{0}{\text{PRT}} \text{ gal} + \frac{7.8}{\text{RCDT}} \text{ gal} = \frac{7.8}{\text{Total}} \text{ gal}$$

5.9.2 Divide the sum by the elapsed time: RM

$$\frac{7.8}{\text{Total}} \text{ gal} \div \frac{60}{\text{Time}} \text{ min} = \frac{0.13}{\text{Contained Leak Rate}} \text{ gpm}$$

NOTE

Record 5 gpd for Primary-to-Secondary Leakage Rate in Step 5.9.4 if Unit is in "Normal Plant Operation" (< 5 gpd Leak Rate) as defined in 0PGP03-ZO-0041, Action for Monitoring Primary to Secondary Leakage, otherwise record the current Rad Monitor (ex. RT-8027) reading or contact Chemistry for a calculated value.

5.9.3 RECORD the current Primary-to-Secondary Leak Rate in Step 5.9.4. RM

5.9.4 Divide results by 1440 to determine leak rate in gallons per minute.

$$\frac{5}{\text{Primary-to-Secondary Leakage Rate}} \text{ gpd} \div (1440 \text{ min/day}) = \frac{.0035}{\text{Primary-to-Secondary Leakage Rate}} \text{ gpm}$$

NOTE

Uncontained RCS Leakage may be determined using computer generated data when available or Data Sheet 2, Uncontained Identified Leakage Rate.

5.9.5 ENTER the Uncontained Identified RCS Leak Rate as determined by Data Sheet 2, Uncontained Identified Leakage Rate, or approved computer program. RM

Uncontained Identified Leakage Rate: 0 gpm

Reactor Coolant Inventory

Initials

NOTE

IDENTIFIED LEAKAGE Rate Acceptance Criteria is less than or equal to 10 gpm.

- AC 5.10 DETERMINE IDENTIFIED LEAKAGE Rate by summing Contained, Primary-to-Secondary and Uncontained Leakage Rates.

$$\frac{0.13}{(5.9.2)} \text{ gpm} + \frac{.0035}{(5.9.4)} \text{ gpm} + \frac{0}{(5.9.5)} \text{ gpm} = \frac{0.1335}{\text{IDENTIFIED LEAKAGE RATE}} \text{ gpm}$$

Contained Leak
RatePrimary -
Secondary
Leakage RateUncontained
Leak Rate

- 5.10.1 Verify the Leakage recorded in Step 5.10 satisfies the Acceptance Criteria of Section 6.0.

RM

- 5.10.2 Compare the Leakage recorded in Step 5.10 to the Administrative Action Limits of Section 7.0.

RM

- 5.11 DETERMINE the change in IDENTIFIED LEAKAGE rates by performing the following:

NOTE

The Identified Leakage value recorded in Step 5.11.1 should be from the previous “daily” (i.e., approximately 24 hrs ago) leakage test that was performed using a 2-hour (min) test period. This data may be from a more recent previous test if attempting to identify a rapidly increasing leak rate.

- 5.11.1 RECORD the IDENTIFIED LEAKAGE from the previous surveillance test.

RMPrevious IDENTIFIED LEAKAGE 0.187 gpm

- 5.11.2 DETERMINE change in (Δ) IDENTIFIED LEAKAGE rate by subtracting Previous IDENTIFIED LEAKAGE Rate from IDENTIFIED LEAKAGE Rate (Step 5.10).

RM

$$\frac{0.1335}{(5.10)} \text{ gpm} - \frac{0.187}{(5.11.1)} \text{ gpm} = \frac{-0.0535}{\Delta \text{ IDENTIFIED LEAKAGE Rate}} \text{ gpm}$$

- 5.11.3 Compare the Δ IDENTIFIED LEAKAGE recorded in Step 5.11.2 to the Administrative Action Limits of Section 7.0.

RM

Reactor Coolant Inventory

Initials

NOTE

- UNIDENTIFIED LEAKAGE Rate Acceptance Criteria is less than or equal to 1 gpm.
- Due to uncertainties in determining Gross and Identified Leakage, the value for Unidentified Leakage may be negative. IF the Unidentified Leakage result is negative, THEN data collected during the test period should be reviewed for errors AND action taken per 0PGP03-ZO-0046, RCS Leakage Monitoring, as appropriate.

AC 5.12 DETERMINE UNIDENTIFIED LEAKAGE Rate by subtracting IDENTIFIED LEAKAGE Rate from GROSS Leakage Rate.

$$\frac{0.628}{(5.8.2)} \text{ gpm} - \frac{0.1335}{(5.10)} \text{ gpm} = \frac{0.4945}{\text{UNIDENTIFIED LEAKAGE Rate}} \text{ gpm}$$

5.12.1 Verify the Leakage recorded in Step 5.12 satisfies the Acceptance Criteria of Section 6.0. RM

5.12.2 Compare the Leakage recorded in Step 5.10 to the Administrative Action Limits of Section 7.0. RM

5.13 DETERMINE the change in UNIDENTIFIED LEAKAGE Rate by performing the following:

NOTE

The Unidentified Leakage value recorded in Step 5.13.1 should be from the previous “daily” (i.e., approximately 24 hrs ago) leakage test that was performed using a 2-hour (min) test period. This data may be from a more recent previous test if attempting to identify a rapidly increasing leak rate.

5.13.1 RECORD the UNIDENTIFIED LEAKAGE from the previous surveillance test. RM

Previous UNIDENTIFIED LEAKAGE 0.134 gpm

5.13.2 DETERMINE change in (Δ) UNIDENTIFIED LEAKAGE Rate by subtracting previous UNIDENTIFIED LEAKAGE Rate from UNIDENTIFIED LEAKAGE Rate (Step 5.12). RM

$$\frac{0.4945}{(5.12)} \text{ gpm} - \frac{0.134}{(5.13.1)} \text{ gpm} = \frac{0.3605}{\Delta \text{ UNIDENTIFIED LEAKAGE Rate}} \text{ gpm}$$

5.13.3 Compare the Δ UNIDENTIFIED LEAKAGE recorded in Step 5.13.2 to the Administrative Action Limits of Section 7.0. RM

Reactor Coolant Inventory

Initials

5.14 DETERMINE the increase in UNIDENTIFIED LEAKAGE Rate above baseline by performing the following:

5.14.1 RECORD the UNIDENTIFIED LEAKAGE Rate from Step 5.12. RM

UNIDENTIFIED LEAKAGE $\frac{0.4945}{\text{(Step 5.12)}} \text{ gpm}$

5.14.2 DETERMINE the increase in UNIDENTIFIED LEAKAGE Rate above baseline. RM

$\frac{0.4945}{\text{(Step 5.12)}} \text{ gpm} - \frac{0.034}{\text{(0.034 – Unit 1)}} \text{ gpm} = \frac{0.4605}{\text{(0.021 – Unit 2)}} \text{ gpm}$
Increase Above Baseline
(record "0" if result is negative)

5.14.3 Compare the increase above baseline recorded in Step 5.14.2 to the Administrative Action Limits of Section 7.0. RM

NOTE

- Mark Section 5.15 "N/A" IF Sump Level Monitoring is NOT available on the ICS Plant Computer.
- (Good Operating Practice) Performance of this step is recommended following refueling outages where there is a significant change in the expected leakage into the normal or secondary containment sumps.

5.15 IF this test is being performed due to a change in leakage indicated on the ICS Plant Computer Sump Level monitoring program AND the RCS leak rate is normal, THEN perform the following on the computer:

5.15.1 Access the "Point Information" display. N/A

5.15.2 Remove the desired point from Scan and enter the value of ZERO (0.0) for the following constants:

- K7801 "Cntmnt Nrm Sump Ident Inflow" N/A
- K7802 "Cntmnt SCD Sump Ident Inflow" N/A

5.15.3 WHEN one hour has elapsed, THEN obtain the calculated inflow values from RC-012 RCPB LEAK DETECTION STATUS display and record the values below:

- NORMAL SUMP CALCULATED INFLOW N/A gpm
- SECONDARY SUMP CALCULATED INFLOW N/A gpm

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Reactor Coolant Inventory			

Initials

- 5.15.4 Enter the value for NORMAL SUMP CALCULATED INFLOW from Step 5.15.3 into K7801 "Cntmnt Nrm Sump Ident Inflow" and return the point to Scan. N/A
- 5.15.5 Enter the value from SECONDARY SUMP CALCULATED INFLOW from Step 5.15.3 into K7802 "Cntmnt SCD Sump Ident Inflow" and return the point to Scan. N/A
- 5.15.6 Enter the new identified inflow values for K7801 and K7802 into the Plant Computer Accessible Constants Log. N/A

NOTE

- The maximum allowed Alert Alarm setpoint for the RT-8011 Particulate Channel is 6.00 E-07 uCi/cc per the scaling manual.
- The alarm setpoint may be verified at the RM-11 or the RM-23A.

- 5.16 Compare the RT-8011 Particulate Channel Alert Alarm setpoint to the Notification Level value for the RT-8011 Particulate Channel listed on the current RCB Purge Notification Levels Form (0PCP09-HC-0001 Form 1). _____
- 5.16.1 IF required, THEN update the RT-8011 Particulate Channel Alert Alarm setpoint to match the Notification Level value (NOT to exceed the maximum allowed value) using Data Sheet 3, RT-8011 Particulate Channel Alert Alarm Setpoint Changes. _____
- 5.16.2 Retain the completed Data Sheet 3 with Data Sheet 1. _____
- 5.17 ENSURE all performers and verifiers sign/initial on Data Sheet 1. RM
- 5.18 DETERMINE test results by using Acceptance Criteria, Section 6.0 AND sign Test Performed by. RM
- 5.19 NOTIFY Shift Supervisor of test results and completion. RM
- 5.20 IF any Administrative Action Limits are exceeded, THEN REFER to 0PGP03-ZO-0046, RCS Leakage Monitoring and take action as directed by the Shift/Unit Supervisor, OTHERWISE N/A this step. RM

Reactor Coolant Inventory

Initials

5.21 RECORD the following in the Station Narrative Log:

- IDENTIFIED LEAKAGE RM
- UNIDENTIFIED LEAKAGE RM
- (Δ) UNIDENTIFIED LEAKAGE RM
- Increase in UNIDENTIFIED LEAKAGE Rate above Baseline RM

5.22 Forward procedure to Shift Supervisor for review. RM6.0 Acceptance Criteria

6.1 Leakage rates as follows:

- IDENTIFIED LEAKAGE does **NOT** exceed 10.0 gpm. (Step 5.10)
- AND
- UNIDENTIFIED LEAKAGE does **NOT** exceed 1.0 gpm. (Step 5.12)

7.0 Administrative Action LimitsNOTE

Administrative Action Limits are **NOT** Acceptance Criteria and failure to meet them **DOES NOT** require Technical Specification ACTION entry.

7.1 IDENTIFIED LEAKAGE

- Greater Than or Equal to 3.0 gpm (Step 5.10)
- Expected to Exceed 10 gpm Within 24 Hrs (Step 5.11)

7.2 UNIDENTIFIED LEAKAGE

- Greater Than or Equal to 0.2 gpm (Step 5.12)
- Expected to Exceed 1 gpm Within 24 Hrs (Step 5.13)
- Changed by 0.2 gpm (increase or decrease) (Step 5.13)
- Increased by 0.1 gpm from previous daily value (Step 5.13)
- Increased by 0.25 gpm above baseline (Step 5.14)

Reactor Coolant Inventory**8.0** References**8.1** **Technical Specifications**

8.1.1 3.4.6.2

8.1.2 4.4.6.2.1.c

8.2 **Regulatory Guides and Standards**

None

8.3 **UFSAR**

None

8.4 **Commitments**

8.4.1 ST-AE-HL-91335, Inspection Report 87-37, Item 3f

8.4.2 CR# 95-239 (IEN 94-46)

8.4.3 NOC-AE-07002120, Inspection and Mitigation of Alloy 82/182 Pressurizer Butt Welds - Revised

8.5 **Calculations**

8.5.1 CREE 03-1958-1, The bases for the RCS unidentified leakage threshold.

8.5.2 CREE 03-6687-13, The bases for the RCS unidentified leakage threshold.

8.6 **Technical Standards and Manuals**

8.6.1 N1(2)RART8011 Scaling Manual

8.7 **Drawings**

None

8.8 **STPEGS Procedures and Policies**

8.8.1 0PCP09-ZR-0005, Determination of Primary to Secondary Leak Rate

8.8.2 Plant Curve Book

8.8.3 0PGP03-ZO-0046, RCS Leakage Monitoring

8.8.4 0PCP09-HC-0001, Reactor Containment Purge

9.0 Support Documents9.1 Addendum 1, Temperature Change Conversion Factors For T_{avg}/T_{cold} 500 - 600°F

9.2 Data Sheet 1, Leakage Rate

9.3 Data Sheet 2, Uncontained Identified Leakage Rate

9.4 Data Sheet 3, RT-8011 Particulate Channel Alert Alarm Setpoint Changes

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Reactor Coolant Inventory			
Addendum 1	Temperature Change Conversion Factors For T_{avg}/T_{cold} 500 – 600°F		Page 1 of 1

TEMP	CONVERSION FACTOR	TEMP	CONVERSION FACTOR	TEMP	CONVERSION FACTOR	TEMP	CONVERSION FACTOR
500	46.3	526	52.4	552	60.8	578	72.5
501	46.5	527	52.7	553	60.9	579	73.0
502	46.7	528	52.9	554	61.6	580	73.7
503	46.8	529	53.4	555	61.8	581	74.3
504	47.0	530	53.4	556	62.3	582	74.8
505	47.4	531	53.9	557	62.6	583	75.4
506	47.6	532	54.1	558	63.1	584	76.1
507	47.7	533	54.4	559	63.4	585	76.4
508	47.9	534	54.8	560	63.9	586	77.3
509	48.3	535	54.9	561	64.2	587	78.0
510	48.4	536	55.5	562	64.7	588	78.6
511	48.6	537	55.6	563	65.3	589	79.2
512	48.9	538	55.9	564	65.6	590	79.8
513	49.1	539	56.3	565	66.1	591	80.6
514	49.5	540	56.4	566	66.6	592	81.3
515	49.6	541	57.0	567	66.8	593	81.9
516	49.8	542	57.3	568	67.5	594	82.9
517	50.2	543	57.4	569	67.8	595	83.5
518	50.3	544	58.0	570	68.3	596	84.2
519	50.5	545	58.1	571	69.0	597	85.0
520	50.8	546	58.6	572	69.3	598	85.8
521	51.2	547	59.0	573	69.8	599	86.8
522	51.3	548	59.3	574	70.4	600	87.5
523	51.7	549	59.4	575	70.9		
524	51.9	550	60.2	576	71.4		
525	52.2	551	60.3	577	72.1		

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Data Sheet 1	Leakage Rate (Sample)		Page 1 of 2

Procedure Performance Data Sheet

Unit Number: 1	Test Interval: 72 Hour (TS Credit) - Per the Surveillance Database	Technical Specifications Reference: 4.4.6.2.1.c	Plant MODE: ①,2,3, or 4
Reason for Test: <input checked="" type="checkbox"/> Periodic Surveillance Test <input checked="" type="checkbox"/> For Surveillance Credit			
Test Results: (Entry Conditions 0PGP03-ZO-0046) Administrative Action Limits Exceeded: <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES (explain in Remarks) Technical Specifications Allowable Value Exceeded: <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES (explain in Remarks) <input checked="" type="checkbox"/> Acceptable (All AS LEFT data within tolerance) <input type="checkbox"/> Unacceptable (Any AS LEFT data NOT within tolerance) (explain in Remarks)			
Test Performed by: <u>Robert Miller</u> Reactor Operator		<u>11/8/2007</u> Date	<u>0830</u> Time
Data Transcription or Calculations Verified By: <u>John Glenn</u> Reactor Operator		<u>11/8/2007</u> Date	<u>0930</u> Time
Plant Ops Review: Potential Reportable Occurrence: <input type="checkbox"/> Yes <input type="checkbox"/> No LCO Action Statement Entered? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Reviewed By: _____ Shift Supervisor		_____	_____
Operations Surveillance Coordinator Review: Reviewed By: _____ Operations Surveillance Coordinator			
		_____	_____

Performers and Verifiers:

Name (Print)	Signature	Initials
Robert Miller	<i>Robert Miller</i>	<i>RM</i>
John Glenn	<i>John Glenn</i>	<i>JG</i>

Remarks: Administrative Action Levels exceeded in steps 5.12, 5.13 and 5.14.

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Reactor Coolant Inventory			
Data Sheet 1	Leakage Rate		Page 2 of 2

NOTE

Computer generated data should be used whenever possible. However, in all cases the same instrument must be used for STOP data that was used for START data.

	Instrument	Step 5.2 Start	Step 5.3 Stop	Correction Factor (CF)	Calculation	Result
Time	N/A	<u>0700</u>	<u>0800</u>	N/A	STOP - START	<u>60</u> min.
Reactor Power	<u>U1118</u>	<u>100</u> %	<u>100</u> %	N/A	STOP - START	<u>0</u> ≤ 1.0% SAT UNSAT
PRZR/RCS Pressure	QDPS <u>PI0457</u>	<u>2235</u> psig	<u>2232</u> psig	N/A	STOP - START	<u>-5</u> ≤ 10 psig SAT UNSAT
VCT Level	<u>L0112</u> or	<u>53</u> %	<u>49</u> %	33.9	(START - STOP)CF	<u>135.6</u> gal
PRZR Level	<u>LI0456</u>	<u>55.3</u> %	<u>56.3</u> %	(I)	(START - STOP)CF	<u>-68.4</u> gal
RCS Tavg/Tcold	<u>U0524</u>	<u>591.9</u> °F	<u>592</u> °F	<u>81.3</u> (2 or 3)	(STOP - START)CF	<u>8.13</u> gal
Makeup Totalizer	FQI-0111B	<u>689903</u> gal	<u>689903</u> gal	N/A	STOP - START	<u>0</u> gal
PRT Level	<u>L0485</u> or	<u>75</u> % <u>12176</u> gal	<u>75</u> % <u>12176</u> gal	N/A	STOP - START	<u>0</u> gal
RCDT Level	<u>L4901</u> or	<u>50</u> % <u>187.3</u> gal	<u>52</u> % <u>195.1</u> gal	N/A	STOP - START	<u>7.8</u> gal

GROSS .628 gpm - IDENTIFIED .1335 gpm = UNIDENTIFIED .4945 gpm
(4) (5) (6)

IDENTIFIED includes (Primary - to - Secondary) .0035 gpm and (Other) 0 gpm
(7) (8)

Δ UNIDENTIFIED LEAKAGE = (Current Unidentified) .4945 gpm - (Previous Unidentified) .134 gpm = .3605 gpm
(6) (9) (10)

INCREASE ABOVE BASELINE* = (Current Unidentified) .4945 gpm - (Baseline**) .034 gpm = .4605 gpm
(6) U1 = 0.034 U2 = 0.021 (11)

* - Data entry is N/A after PZR Nozzle Weld mitigation is completed.

** - Baseline values reference CREE 07-2473-2

- | | | | | |
|------------------|----------------|----------------|-----------------|------------------|
| (1) Step 5.6 | (2) Step 5.7.1 | (3) Step 5.7.2 | (4) Step 5.8.2 | (5) Step 5.10 |
| (6) Step 5.12 | (7) Step 5.9.4 | (8) Step 5.9.5 | (9) Step 5.13.1 | (10) Step 5.13.2 |
| (11) Step 5.14.2 | | | | |

This DATA SHEET, when completed, shall be retained for 5 years.

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Reactor Coolant Inventory			
Data Sheet 2	Uncontained Identified Leakage Rate (Sample)		Page 1 of 1

NOTE

- Computer generated data may be used in place of this form. IF computer generated data is used, THEN ensure the data printout is attached to this procedure.
- Data for Uncontained Identified RCS Leakage may be obtained from the active Identified Reactor Coolant Leakage Logs (0PGP03-ZO-0046, Form 1) or other approved tracking methodology.
- http://www.onlineconversion.com/flow_rate_volume.htm (rounded to 7 decimal places)
1 milliliter/minute = 0.0002642 gallon/minute [US]

- 1.0 ENTER identified RCS leakage (exclude RCS leakage directed to the PRT or RCDT and Primary-to-Secondary Leakage) into table below. Calculate the total Uncontained Identified RCS Leak Rate in gpm.

Leakage Source and CR #	Leakage Rate (gpm)
N/A	N/A

Total Uncontained Identified RCS Leakage: _____ 0 _____ gpm

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Data Sheet 3	RT-8011 Particulate Channel Alert Alarm Setpoint Changes		Page 1 of 2

Initials

NOTE

- The alert alarm setpoint change must be performed at the RM-11 console in order to ensure the RM-11 Master Data Base is updated.
- Verification of alarm setpoints may be performed at the RM-11 or the RM-23A.

1.0 RT-8011 Particulate Channel Alert Alarm Setpoint Changes

- 1.1 OBTAIN Shift Supervisor authorization to change the ALERT ALARM setpoint for the RT-8011 Particulate Channel.

NOTE

IF the notification level value exceeds the maximum allowed alert alarm setpoint of 6.00 E-07 uCi/cc, THEN record 6.00 E-07 in Step 1.2.

- 1.2 RECORD the current notification level value for the RT-8011 Particulate Channel from the RCB Purge Notification Levels Form.

_____ uCi/cc

- 1.3 At the RM-11 console, PRESS the GRID 3 key.

- 1.4 Using the numeric keypad, key in 1(2)111 and PRESS the SEL key to display the grid item for RT-8011.

- 1.5 INSERT the Supervisory Key and place it in the SUPERVISOR position.

- 1.6 PRESS the LIT, GRID 5, then SEL keys to display the Supervisor RM-80 Data Base for RT-8011.

- 1.7 Using the numeric keypad, key in -10 and PRESS the SEL key to highlight the Alert Alarm.

- 1.8 RECORD the "As Found" Alert Alarm setpoint for the RT-8011 Particulate Channel.

_____ uCi/cc

This DATA SHEET, when completed, shall be retained for 5 years.

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Data Sheet 3	RT-8011 Particulate Channel Alert Alarm Setpoint Changes		Page 2 of 2

Initials

NOTE

The setpoint is in the form X.XX E-XX. The setpoint is automatically formatted by entering the first three digits, a + or -, and the last two digits.

1.9 Using the numeric keypad, key in the value recorded in Step 1.2 then PRESS the ENTER key. _____

1.10 Allow the RM-80 value and Master value to synchronize on the display. _____

NOTE

A printout of the monitor and channel items may be obtained by pressing the PRINT CRT key.

1.11 Record the "As Left" Alert Alarm setpoint for the RT-8011 Particulate Channel. _____

_____ uCi/cc

1.12 PLACE Supervisory Key Switch in the NORMAL position. _____

1.13 REMOVE Supervisory Key from the RM-11. _____

1.14 INDEPENDENTLY VERIFY the RT-8011 Particulate Channel Alert Alarm setpoint is the value recorded in Step 1.2. _____

Ind. Verif

Figure 10.8
Pzr Relief Tank
(PCB110.08, Rev.4)
Unit 1

Ref: Calc. 86-RC-020

Indicated Level (%)	Volume (Gallons)	Indicated Level (%)	Volume (Gallons)	Indicated Level (%)	Volume (Gallons)	Indicated Level (%)	Volume (Gallons)
0 (Inst. Tap)	374	25	3555	50	7865	75	12176
1	458	26	3714	51	8044	76 (Hi Alarm)	12334
2	546	27	3876	52	8223	77	12490
3	640	28	4038	53	8402	78	12644
4	738	29	4203	54	8581	79	12797
5	840	30	4368	55	8759	80	12947
6	947	31	4535	56	8937	81	13096
7	1058	32	4704	57	9115	82	13242
8	1172	33	4873	58	9292	83	13386
9	1290	34	5043	59	9469	84	13527
10	1411	35	5215	60	9645	85	13666
11	1536	36	5387	61	9821	86	13802
12	1664	37	5561	62	9996	87	13936
13	1794	38	5735	63	10170	88	14067
14	1928	39	5910	64 (Lo Alarm)	10343	89	14194
15	2064	40	6085	65	10515	90	14319
16	2203	41	6261	66	10687	91	14440
17	2345	42	6438	67	10857	92	14558
18	2488	43	6616	68	11027	93	14673
19	2635	44	6793	69	11195	94	14783
20	2783	45	6971	70	11362	95	14890
21	2933	46	7150	71	11528	96	14993
22	3086	47	7328	72	11692	97	15091
23	3240	48	7507	73	11855	98	15184
24	3397	49	7686	74	12016	99	15273
						100 (Inst. Tap)	15356

Preparer/Date James Heil / 6/7/2000
 James Heil

Reviewer/Date Kevin Regis / 6/8/2000

Approval/Date JB Cook / 6/14/2000
 Eng. Supervisor

Figure 10.9

RC Drain Tank

Unit 1

Ref: Calc. 86-WL-019

LI4901 (%)	Level (Gal)	Alarm/Remark	LI4901 (%)	Level (Gal)	Alarm/Remark
0	19.8	Inst. Tap	50	187.3	
1	24.2		52	195.1	
4	29.1		54	203.0	
6	34.2		56	210.4	
7.15	37.2	LO-LO/Pump Trip	58	218.1	
8	39.6		60	225.9	
10	45.3		62	233.6	
12	50.9		64	240.8	
14	57.0		66	248.4	
16	63.4		68	255.9	
17.86	69.5	LCV Close	70	263.3	
18	69.9		72	270.6	
20	76.2		74	277.5	
22	83.0		76	284.6	
24	90.0		78	291.6	
26	97.1		80	298.4	
28	104.4		82	304.7	
30	111.3		82.14	305.5	LCV Open
32	118.7		84	311.2	
34	126.2		86	317.6	
36	133.8		88	323.7	
38	141.0		90	329.7	
40	148.7		92	335.0	
42	156.5		92.86	337.4	HI-HI Alm
44	164.3		94	340.4	
46	172.1		96	345.5	
48	179.5		98	350.4	
			100	354.8	

Preparer/Date James Heil / 8/17/1995
James Heil

Reviewer/Date Kevin Regis / 8/17/1995

Approval/Date J/B Cook / 8/21/1995
Eng. Supervisor

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Reactor Coolant Inventory			
Quality	Safety-Related	Usage: IN HAND CONTROLLING STATION	Effective Date: 03/01/07
R. Hamilton	J. C. Heil	Crew 2D	Generation Support
PREPARER	TECHNICAL	USER	COGNIZANT DEPT.

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Reactor Coolant Inventory**1.0 Purpose and Scope**

- 1.1 Provide instructions for performing a Reactor Coolant System Water Inventory Balance to determine RCS leakage and satisfy the surveillance requirements of Technical Specification Section 4.4.6.2.1.c.
- 1.2 The calculations in this procedure assume the plant is in Modes 1, 2, 3, or 4 and plant conditions reflect **“Steady State Operations”**. Performance of an inventory balance at conditions other than previously stated may yield unreliable results.
- 1.3 Provide a means for updating the Plant Computer Sump Level Monitoring System identified leakage value.
- 1.4 Provide a means to control the RT-8011 Particulate Channel Alert Alarm setpoint to aid in the detection of changes in RCS Leakage.
- 1.5 Provide a means to evaluate calculated leakage rates against administrative leakage rate criteria.

2.0 Responsibilities

- 2.1 This procedure is performed by Plant Operations.
- 2.2 The following personnel shall review this test:
 - Test Coordinator
 - Shift Supervisor
 - Division Surveillance Coordinator
- 2.3 After completion of test, routing is per OPGP03-ZE-0004 (Plant Surveillance Program), and OPGP03-ZA-0055 (Plant Surveillance Scheduling).

Reactor Coolant Inventory

3.0 Precautions and Notes

- 3.1 IF the computer program is used for data calculation, THEN the following applies:
- 3.1.1 The computer generated form may be substituted for Data Sheet 1, Leakage Rate, Page 2 of 2.
 - 3.1.2 A second qualified individual SHALL sign on the PPDS cover sheet where indicated, to verify the correct transcription of data.
- 3.2 IF a manual calculation is performed, THEN a second qualified individual SHALL sign on the PPDS cover sheet where indicated, to verify the calculation is correct.
- 3.3 In Modes 1 or 2, Reactor Power SHALL be maintained in a 1% band.
- 3.4 In Modes 1, 2, or 3, a minimum of one RCP in operation is required.
- 3.5 IF performing to obtain an Identified OR Unidentified Leakage Rate, THEN VERIFY RCDT level is being maintained between 18% and 70%.
- 3.6 Diversion of letdown to Recycle Holdup Tanks will invalidate the test.
- 3.7 IF determining an Identified OR Unidentified Leak Rate, THEN the following will invalidate this test:
- 3.7.1 Draining of the RCDT or PRT
 - 3.7.2 Venting, draining, or sampling any portion of the RCS, CVCS, or interconnected piping
 - 3.7.3 RCS sampling may be allowed to recirculate to the VCT, however, RCS Coolant SHALL **NOT** be removed from the RCS during this test.
 - 3.7.4 Opening RC-FV-3650 (PRT SPRAY ISOL) or the opening of RC-FV-3651 (RMW to PRT/RCP standpipe) with known leakage across RC-FV-3650 (Reference 8.4.2).
- 3.8 Failure to meet the acceptance criteria of the test may require entry into LCO Action Statement 3.4.6.2.
- 3.9 Any changes to this procedure requires a review of the computer program for adherence to Software Quality Assurance Standards.
- 3.10 Operation of the HHSI or LHSI pumps may invalidate the test due to potential relief valve leakage into the PRT (Reference 8.4.2).

Reactor Coolant Inventory

- 3.11 Comparisons of calculated UNIDENTIFIED LEAKAGE values may differ by ± 0.120 gpm using 1-hour leakage test periods and by ± 0.060 gpm using 2-hour leakage test periods due to instrument uncertainties. (CREE 03-6687-13)
- 3.12 To meet the leak rate measurement commitment contained in Reference 8.4.3, performance of this test using a 2-hour leakage test period is required at least once daily during applicable operating modes. This test may be performed at other times using a 1-hour leakage test period.
- 3.13 IF this test can not be performed “daily” OR the daily test is performed with less than a 2-hour leakage test period, THEN Operations Management and Licensing SHALL be notified to evaluate any impact to commitments contained in Reference 8.4.3.
- 3.14 The RT-8011 Particulate Channel Alert Alarm SHALL be set to the Notification Level value for RCB Purges provided by Chemistry on 0PCP09-HC-0001 Form 1, RCB Purge Notification Levels, **NOT** to exceed the maximum allowed setpoint of 6.00 E-07 uCi/cc per the scaling manual.
- 3.15 **“Steady State Operations”**: (Calculations performed during non-steady state conditions may **NOT** be used to satisfy Technical Specification surveillance acceptance criteria.) Technical Specification Basis (4.4.6.2.1) describes that steady state operations are required to perform a proper water inventory balance. For this procedure, **“Steady State Operations”** is defined as:
- Stable PRZR pressure as specified in Step 5.3.2.
 - Stable RCS temperature (i.e., Tave changing by $< 0.5^{\circ}\text{F/hr}$)
 - Stable Reactor power level as specified in Step 5.3.1.
 - Stable Pressurizer and VCT levels, Charging and Letdown, and RCP Seal Injection and Seal Return flows (Note: makeup to the VCT during the test period will introduce error in the leak rate determination. Plant conditions should be established such that makeup to the VCT will not be required during the test period.)
- 3.16 Specific Unidentified Baseline Leakage Values for the respective Units are as follows:

<u>Unit</u>	<u>Baseline Unidentified Leakage Value</u>
One	0.034 gpm (CREE 07-2473-2)
Two	0.021 gpm (CREE 07-2473-2)

Initials

4.0 Prerequisites

4.1 ENSURE the Pressurizer/Reactor Coolant System pressure is approximately 400 psig OR 2235 psig.

RM

4.2 ENSURE “**Steady State Operations**” conditions are established.

RM

4.3 Record the following on PPDS:

- Unit Number

RM

- Reason for Test

RM

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Reactor Coolant Inventory			

Initials

5.0 Procedure

5.1 VERIFY the prerequisites are complete.

RM

5.2 RECORD START data and instrumentation on Data Sheet 1, Leakage Rate.

RM

NOTE

This test should be performed over a two hour period unless steady conditions cannot be maintained. A test period of one hour is sufficient to satisfy the surveillance test. The test period may be specified at the discretion of the Shift Supervisor.

5.3 WHEN the determined test period has elapsed, THEN perform the following:

5.3.1 VERIFY Stop time Reactor Power is within 1% of Start time Reactor Power.

RM

5.3.2 VERIFY Stop time PRZR pressure is within 10 psig of Start time PRZR pressure.

RM

5.3.3 IF Reactor Power and Pressure data are within limits above, THEN record STOP data on Data Sheet 1, Leakage Rate.

RM

5.3.4 IF Reactor Power and Pressure data are **NOT** within limits above, THEN stabilize Reactor Power and Pressure within limits.

N/A

5.3.4.1 WHEN Reactor Power and Pressure stabilize within limits, THEN record STOP data on Data Sheet 1, Leakage Rate.

N/A

5.4 DETERMINE PRT level in gallons from percent using the Plant Curve Book, Figure 10.8, Pzr Relief Tank.

RM

5.5 DETERMINE RCDT level in gallons from percent using the Plant Curve Book, Figure 10.9, RC Drain Tank.

RM

Reactor Coolant Inventory

Initials

5.6 Pressurizer level correction factor calculation:

$$68.3 + 0.023 (2235 - \frac{2232}{\text{Stop Press}} \text{ psig}) = \frac{68.369}{\text{gal/\%}}$$

RM

5.7 Temperature correction factor calculation:

5.7.1 IF pressure is approximately 400 psig AND Stop Temperature is between 240 and 400°F, THEN PERFORM the following:

$$32 + 0.147 (\frac{N/A}{\text{Stop Temp}} ^\circ\text{F} - 240) = \frac{N/A}{\text{gal/}^\circ\text{F}}$$

N/A

5.7.2 IF pressure is approximately 2235 psig AND Stop Temperature is between 500 and 600°F, THEN use Addendum 1.

RM

5.8 GROSS Leakage Rate calculation:

5.8.1 Sum changes in VCT, PRZR, TEMP and Makeup.

$$\frac{135.6}{\text{VCT}} \text{ gal} + \frac{-68.4}{\text{PRZR}} \text{ gal} + \frac{8.13}{\text{TEMP}} \text{ gal} + \frac{0}{\text{Makeup}} \text{ gal} = \frac{75.33}{\text{Total}} \text{ gal}$$

5.8.2 Divide the sum by the elapsed time:

$$\frac{75.33}{\text{Total}} \text{ gal} \div \frac{60}{\text{Time}} \text{ min} = \frac{1.256}{\text{GROSS Leakage Rate}} \text{ gpm}$$

CRITICAL ERROR

Applicant's copy incorrectly used 120 minutes instead of 60 minutes. Using 120 minutes makes the GROSS Leakage Rate to be .628 gpm.

Reactor Coolant Inventory

Initials

5.9 Identified Leakage Rate calculation:

5.9.1 Sum data from the PRT and RCDT: RM

$$\frac{0}{\text{PRT}} \text{ gal} + \frac{7.8}{\text{RCDT}} \text{ gal} = \frac{7.8}{\text{Total}} \text{ gal}$$

5.9.2 Divide the sum by the elapsed time: RM

$$\frac{7.8}{\text{Total}} \text{ gal} \div \frac{60}{\text{Time}} \text{ min} = \frac{0.13}{\text{Contained Leak Rate}} \text{ gpm}$$

NOTE

Record 5 gpd for Primary-to-Secondary Leakage Rate in Step 5.9.4 if Unit is in "Normal Plant Operation" (< 5 gpd Leak Rate) as defined in 0PGP03-ZO-0041, Action for Monitoring Primary to Secondary Leakage, otherwise record the current Rad Monitor (ex. RT-8027) reading or contact Chemistry for a calculated value.

5.9.3 RECORD the current Primary-to-Secondary Leak Rate in Step 5.9.4. RM

5.9.4 Divide results by 1440 to determine leak rate in gallons per minute.

$$\frac{5}{\text{Primary-to-Secondary Leakage Rate}} \text{ gpd} \div (1440 \text{ min/day}) = \frac{.0035}{\text{Primary-to-Secondary Leakage Rate}} \text{ gpm}$$

RMNOTE

Uncontained RCS Leakage may be determined using computer generated data when available or Data Sheet 2, Uncontained Identified Leakage Rate.

5.9.5 ENTER the Uncontained Identified RCS Leak Rate as determined by Data Sheet 2, Uncontained Identified Leakage Rate, or approved computer program. RM

Uncontained Identified Leakage Rate: 0 gpm

Reactor Coolant Inventory

Initials

NOTE

IDENTIFIED LEAKAGE Rate Acceptance Criteria is less than or equal to 10 gpm.

- AC 5.10 DETERMINE IDENTIFIED LEAKAGE Rate by summing Contained, Primary-to-Secondary and Uncontained Leakage Rates.

$$\frac{0.13}{(5.9.2)} \text{ gpm} + \frac{0.0035}{(5.9.4)} \text{ gpm} + \frac{0}{(5.9.5)} \text{ gpm} = \frac{0.1335}{\text{IDENTIFIED LEAKAGE RATE}} \text{ gpm}$$

Contained Leak
RatePrimary -
Secondary
Leakage RateUncontained
Leak Rate

- 5.10.1 Verify the Leakage recorded in Step 5.10 satisfies the Acceptance Criteria of Section 6.0.

RM

- 5.10.2 Compare the Leakage recorded in Step 5.10 to the Administrative Action Limits of Section 7.0.

RM

- 5.11 DETERMINE the change in IDENTIFIED LEAKAGE rates by performing the following:

NOTE

The Identified Leakage value recorded in Step 5.11.1 should be from the previous "daily" (i.e., approximately 24 hrs ago) leakage test that was performed using a 2-hour (min) test period. This data may be from a more recent previous test if attempting to identify a rapidly increasing leak rate.

- 5.11.1 RECORD the IDENTIFIED LEAKAGE from the previous surveillance test.

RMPrevious IDENTIFIED LEAKAGE 0.187 gpm

- 5.11.2 DETERMINE change in (Δ) IDENTIFIED LEAKAGE rate by subtracting Previous IDENTIFIED LEAKAGE Rate from IDENTIFIED LEAKAGE Rate (Step 5.10).

RM

$$\frac{0.1335}{(5.10)} \text{ gpm} - \frac{0.187}{(5.11.1)} \text{ gpm} = \frac{-0.0535}{\Delta \text{ IDENTIFIED LEAKAGE Rate}} \text{ gpm}$$

- 5.11.3 Compare the Δ IDENTIFIED LEAKAGE recorded in Step 5.11.2 to the Administrative Action Limits of Section 7.0.

RM

Reactor Coolant Inventory

Initials

NOTE

- UNIDENTIFIED LEAKAGE Rate Acceptance Criteria is less than or equal to 1 gpm.
- Due to uncertainties in determining Gross and Identified Leakage, the value for Unidentified Leakage may be negative. IF the Unidentified Leakage result is negative, THEN data collected during the test period should be reviewed for errors AND action taken per 0PGP03-ZO-0046, RCS Leakage Monitoring, as appropriate.

AC 5.12 DETERMINE UNIDENTIFIED LEAKAGE Rate by subtracting IDENTIFIED LEAKAGE Rate from GROSS Leakage Rate.

$$\frac{1.256}{(5.8.2)} \text{ gpm} - \frac{0.1335}{(5.10)} \text{ gpm} = \frac{1.1225}{\text{UNIDENTIFIED LEAKAGE Rate}} \text{ gpm}$$

5.12.1 Verify the Leakage recorded in Step 5.12 satisfies the Acceptance Criteria of Section 6.0.

ERROR CARRIED FORWARD

Applicant's copy used a GROSS Leakage Rate of .628 gpm which made the UNIDENTIFIED LEAKAGE Rate 0.4945 gpm.

The GROSS Leakage Rate should be 1.256 gpm making UNIDENTIFIED LEAKAGE Rate 1.1225 gpm.

ERROR CARRIED FORWARD

Applicant's copy has UNIDENTIFIED LEAKAGE as 0.4945 gpm vice 1.1225 gpm.

5.13.1 RECORD the UNIDENTIFIED LEAKAGE from the previous surveillance test.

Previous UNIDENTIFIED LEAKAGE 0.134 gpm

5.13.2 DETERMINE change in (Δ) UNIDENTIFIED LEAKAGE Rate by subtracting previous UNIDENTIFIED LEAKAGE Rate from UNIDENTIFIED LEAKAGE Rate (Step 5.12).

$$\frac{1.1225}{(5.12)} \text{ gpm} - \frac{0.134}{(5.13.1)} \text{ gpm} = \frac{0.9885}{\Delta \text{ UNIDENTIFIED LEAKAGE Rate}} \text{ gpm}$$

5.13.3 Compare the Δ UNIDENTIFIED LEAKAGE recorded in Step 5.13.2 to the Administrative Action Limits of Section 7.0.

RMRMRMRMRM

Reactor Coolant Inventory

Initials

5.14 DETERMINE the increase in UNIDENTIFIED LEAKAGE Rate above baseline by performing the following:

5.14.1 RECORD the UNIDENTIFIED LEAKAGE Rate from Step 5.12. RM

UNIDENTIFIED LEAKAGE 1.1225 gpm
(Step 5.12)

5.14.2 DETERMINE the increase in UNIDENTIFIED LEAKAGE Rate above baseline. RM

$$\begin{array}{rcccl} \underline{1.1225} \text{ gpm} & - & \underline{0.034} \text{ gpm} & = & \underline{1.0885} \text{ gpm} \\ \text{(Step 5.12)} & & \text{(0.034 - Unit 1)} & & \text{Increase Above Baseline} \\ & & \text{(0.021 - Unit 2)} & & \text{(record "0" if result is negative)} \end{array}$$

5.14.3 ERROR CARRIED FORWARD 2 to the RM

Applicant's copy has UNIDENTIFIED LEAKAGE as 0.4945 gpm vice 1.1225 gpm.

- Mark Section 5.15 "N/A" IF Sump Level Monitoring is **NOT** available on the ICS Plant Computer.
- (Good Operating Practice) Performance of this step is recommended following refueling outages where there is a significant change in the expected leakage into the normal or secondary containment sumps.

5.15 IF this test is being performed due to a change in leakage indicated on the ICS Plant Computer Sump Level monitoring program AND the RCS leak rate is normal, THEN perform the following on the computer:

5.15.1 Access the "Point Information" display. N/A

5.15.2 Remove the desired point from Scan and enter the value of ZERO (0.0) for the following constants:

- K7801 "Cntmnt Nrm Sump Ident Inflow" N/A
- K7802 "Cntmnt SCD Sump Ident Inflow" N/A

5.15.3 WHEN one hour has elapsed, THEN obtain the calculated inflow values from RC-012 RCPB LEAK DETECTION STATUS display and record the values below:

- NORMAL SUMP CALCULATED INFLOW N/A gpm
- SECONDARY SUMP CALCULATED INFLOW N/A gpm

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Reactor Coolant Inventory			

Initials

- 5.15.4 Enter the value for NORMAL SUMP CALCULATED INFLOW from Step 5.15.3 into K7801 "Cntmnt Nrm Sump Ident Inflow" and return the point to Scan. N/A
- 5.15.5 Enter the value from SECONDARY SUMP CALCULATED INFLOW from Step 5.15.3 into K7802 "Cntmnt SCD Sump Ident Inflow" and return the point to Scan. N/A
- 5.15.6 Enter the new identified inflow values for K7801 and K7802 into the Plant Computer Accessible Constants Log. N/A

NOTE

- The maximum allowed Alert Alarm setpoint for the RT-8011 Particulate Channel is 6.00 E-07 uCi/cc per the scaling manual.
- The alarm setpoint may be verified at the RM-11 or the RM-23A.

- 5.16 Compare the RT-8011 Particulate Channel Alert Alarm setpoint to the Notification Level value for the RT-8011 Particulate Channel listed on the current RCB Purge Notification Levels Form (0PCP09-HC-0001 Form 1). _____
- 5.16.1 IF required, THEN update the RT-8011 Particulate Channel Alert Alarm setpoint to match the Notification Level value (NOT to exceed the maximum allowed value) using Data Sheet 3, RT-8011 Particulate Channel Alert Alarm Setpoint Changes. _____
- 5.16.2 Retain the completed Data Sheet 3 with Data Sheet 1. _____
- 5.17 ENSURE all performers and verifiers sign/initial on Data Sheet 1. RM
- 5.18 DETERMINE test results by using Acceptance Criteria, Section 6.0 AND sign Test Performed by. RM
- 5.19 NOTIFY Shift Supervisor of test results and completion. RM
- 5.20 IF any Administrative Action Limits are exceeded, THEN REFER to 0PGP03-ZO-0046, RCS Leakage Monitoring and take action as directed by the Shift/Unit Supervisor, OTHERWISE N/A this step. RM

Reactor Coolant Inventory

Initials

5.21 RECORD the following in the Station Narrative Log:

- IDENTIFIED LEAKAGE
- UNIDENTIFIED LEAKAGE
- (Δ) UNIDENTIFIED LEAKAGE
- Increase in UNIDENTIFIED LEAKAGE Rate above Baseline

RMRMRMRM

5.22 Forward procedure to Shift Supervisor for review.

RM6.0 Acceptance Criteria

6.1 Leakage rates as follows:

- IDENTIFIED LEAKAGE does **NOT** exceed 10.0 gpm. (Step 5.10)
- AND
- UNIDENTIFIED LEAKAGE does **NOT** exceed 1.0 gpm. (Step 5.12)

7.0 Administrative Action LimitsNOTE

Administrative Action Limits are **NOT** Acceptance Criteria and failure to meet them **DOES NOT** require Technical Specification ACTION entry.

7.1 IDENTIFIED LEAKAGE

- Greater Than or Equal to 3.0 gpm (Step 5.10)
- Expected to Exceed 10 gpm Within 24 Hrs (Step 5.11)

7.2 UNIDENTIFIED LEAKAGE

- Greater Than or Equal to 0.2 gpm (Step 5.12)
- Expected to Exceed 1 gpm Within 24 Hrs (Step 5.13)
- Changed by 0.2 gpm (increase or decrease) (Step 5.13)
- Increased by 0.1 gpm from previous daily value (Step 5.13)
- Increased by 0.25 gpm above baseline (Step 5.14)

Reactor Coolant Inventory**8.0** References**8.1** **Technical Specifications**

8.1.1 3.4.6.2

8.1.2 4.4.6.2.1.c

8.2 **Regulatory Guides and Standards**

None

8.3 **UFSAR**

None

8.4 **Commitments**

8.4.1 ST-AE-HL-91335, Inspection Report 87-37, Item 3f

8.4.2 CR# 95-239 (IEN 94-46)

8.4.3 NOC-AE-07002120, Inspection and Mitigation of Alloy 82/182 Pressurizer Butt Welds - Revised

8.5 **Calculations**

8.5.1 CREE 03-1958-1, The bases for the RCS unidentified leakage threshold.

8.5.2 CREE 03-6687-13, The bases for the RCS unidentified leakage threshold.

8.6 **Technical Standards and Manuals**

8.6.1 N1(2)RART8011 Scaling Manual

8.7 **Drawings**

None

8.8 **STPEGS Procedures and Policies**

8.8.1 0PCP09-ZR-0005, Determination of Primary to Secondary Leak Rate

8.8.2 Plant Curve Book

8.8.3 0PGP03-ZO-0046, RCS Leakage Monitoring

8.8.4 0PCP09-HC-0001, Reactor Containment Purge

9.0 Support Documents9.1 Addendum 1, Temperature Change Conversion Factors For T_{avg}/T_{cold} 500 - 600°F

9.2 Data Sheet 1, Leakage Rate

9.3 Data Sheet 2, Uncontained Identified Leakage Rate

9.4 Data Sheet 3, RT-8011 Particulate Channel Alert Alarm Setpoint Changes

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Reactor Coolant Inventory			
Addendum 1	Temperature Change Conversion Factors For T_{avg}/T_{cold} 500 – 600°F		Page 1 of 1

TEMP	CONVERSION FACTOR	TEMP	CONVERSION FACTOR	TEMP	CONVERSION FACTOR	TEMP	CONVERSION FACTOR
500	46.3	526	52.4	552	60.8	578	72.5
501	46.5	527	52.7	553	60.9	579	73.0
502	46.7	528	52.9	554	61.6	580	73.7
503	46.8	529	53.4	555	61.8	581	74.3
504	47.0	530	53.4	556	62.3	582	74.8
505	47.4	531	53.9	557	62.6	583	75.4
506	47.6	532	54.1	558	63.1	584	76.1
507	47.7	533	54.4	559	63.4	585	76.4
508	47.9	534	54.8	560	63.9	586	77.3
509	48.3	535	54.9	561	64.2	587	78.0
510	48.4	536	55.5	562	64.7	588	78.6
511	48.6	537	55.6	563	65.3	589	79.2
512	48.9	538	55.9	564	65.6	590	79.8
513	49.1	539	56.3	565	66.1	591	80.6
514	49.5	540	56.4	566	66.6	592	81.3
515	49.6	541	57.0	567	66.8	593	81.9
516	49.8	542	57.3	568	67.5	594	82.9
517	50.2	543	57.4	569	67.8	595	83.5
518	50.3	544	58.0	570	68.3	596	84.2
519	50.5	545	58.1	571	69.0	597	85.0
520	50.8	546	58.6	572	69.3	598	85.8
521	51.2	547	59.0	573	69.8	599	86.8
522	51.3	548	59.3	574	70.4	600	87.5
523	51.7	549	59.4	575	70.9		
524	51.9	550	60.2	576	71.4		
525	52.2	551	60.3	577	72.1		

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Reactor Coolant Inventory			
Data Sheet 1	Leakage Rate (Sample)		Page 1 of 2

Procedure Performance Data Sheet

Unit Number: 1	Test Interval: 72 Hour (TS Credit) - Per the Surveillance Database	Technical Specifications Reference: 4.4.6.2.1.c	Plant MODE: ①,2,3, or 4
--------------------------	---	---	-----------------------------------

Reason for Test:

☒ Periodic Surveillance Test ☒ For Surveillance Credit

Test Results:

(Entry Conditions 0PGP03-ZO-0046)

Administrative Action Limits Exceeded:

☐ NO ☒ YES (explain in Remarks)

Technical Specifications Allowable Value Exceeded:

☐ NO ☒ YES (explain in Remarks)

☐ Acceptable (All **AS LEFT** data within tolerance)

☒ Unacceptable (Any **AS LEFT** data **NOT** within tolerance) (explain in Remarks)

Test Performed by:

Robert Miller
Reactor Operator

11/8/2007 0830
Date Time

Data Transcription or Calculations Verified By:

John Glenn
Reactor Operator

ERRORS CARRIED FORWARD

Applicant's copy is marked as **NO**. TS Allowable Value Exceeded. Should be marked as **YES** with explanation in Remarks. This is due to using wrong calculated GROSS LEAKAGE Rate.

Applicant's copy is marked **Acceptable**. Should be marked **unacceptable** with explanation in remarks. This is due to using wrong calculated GROSS LEAKAGE Rate.

Plant Ops Review:

Potential Reportable Occurrence:

☐ Yes

LCO Action Statement Entered?

☐ Yes

Reviewed By:

Shift Supervisor

Operations Surveillance Coordinator Review:

Reviewed By:

Operations Surveillance Coordinator

Date Time

Performers and Verifiers:

Name (Print)	Signature	Initials
Robert Miller	<i>Robert Miller</i>	<i>RM</i>
John Glenn	<i>John Glenn</i>	<i>JG</i>

Remarks: Reactor Coolant Inventory Surveillance is unacceptable due to UNIDENTIFIED LEAKAGE being greater than 1.0 gpm. This is a violation of Technical Specification 3.4.6.2. (Or words to this effect)

Administrative Action Levels exceeded for steps 5.12, 5.13, and 5.14

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Reactor Coolant Inventory			
Data Sheet 1	Leakage Rate		Page 2 of 2

NOTE

Computer generated data should be used whenever possible. However, in all cases the same instrument must be used for STOP data that was used for START data.

	Instrument	Step 5.2 Start	Step 5.3 Stop	Correction Factor (CF)	Calculation	Result
Time	N/A	<u>0700</u>	<u>0800</u>	N/A	STOP - START	<u>60</u> min.
Reactor Power	<u>U1118</u>	<u>100</u> %	<u>100</u> %	N/A	STOP - START	<u>0</u> ≤ 1.0% SAT UNSAT
PRZR/RCS Pressure	QDPS <u>PI0457</u>	<u>2235</u> psig	<u>2232</u> psig	N/A	STOP - START	<u>-3</u> ≤ 10 psig SAT UNSAT
VCT Level	<u>L0112</u> or	<u>53</u> %	<u>49</u> %	33.9	(START - STOP)CF	<u>135.6</u> gal
PRZR Level	<u>LI0456</u>	<u>55.3</u> %	<u>56.3</u> %	<u>68.4</u> (1)	(START - STOP)CF	<u>-68.4</u> gal
RCS Tavg/Tcold	<u>U0524</u>	<u>591.9</u> °F	<u>592</u> °F	<u>81.3</u> (2 or 3)	(STOP - START)CF	<u>8.13</u> gal
Makeup Totalizer	FQI-0111B	<u>689903</u> gal	<u>689903</u> gal	N/A	STOP - START	<u>0</u> gal
PRT Level	<u>L0485</u> or	<u>75</u> % <u>12176</u> gal	<u>75</u> % <u>12176</u> gal	N/A	STOP - START	<u>0</u> gal
RCDT Level	<u>L4901</u> or	<u>50</u> % <u>187.3</u> gal	<u>52</u> % <u>195.1</u> gal	N/A	STOP - START	<u>7.8</u> gal

GROSS	<u>1.256</u> gpm	- IDENTIFIED	<u>0.1335</u> gpm	= UNIDENTIFIED	<u>1.1225</u> gpm
	(4)		(5)		(6)
IDENTIFIED includes (Primary - to - Secondary)	<u>.0035</u> gpm	and (Other)	<u>0</u> gpm		
	(7)		(8)		
Δ UNIDENTIFIED LEAKAGE = (Current Unidentified)	<u>1.1225</u> gpm	- (Previous Unidentified)	<u>.134</u> gpm	=	<u>0.9885</u> gpm
	(6)		(9)		(10)
INCREASE ABOVE BASELINE* = (Current Unidentified)	<u>1.1225</u> gpm	- (Baseline**)	<u>.034</u> gpm	=	<u>1.0885</u> gpm
	(6)		(11)		

ERRORS CARRIED FORWARD

- * - D Applicant's copy used a GROSS Leakage Rate of .628 gpm.
 ** - B This makes the UNIDENTIFIED LEAKAGE Rate .415 gpm.
 (1)
 (6) Should use a GROSS Leakage Rate of 1.256 gpm.
 (11) UNIDENTIFIED LEAKAGE Rate should be 1.043 gpm.

NON-CRITICAL ERRORS (2)

- Applicant's copy does not have correction factor entered..
 Applicant's copy has an incorrect result of -5. Should be -3.

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Reactor Coolant Inventory			
Data Sheet 2	Uncontained Identified Leakage Rate (Sample)		Page 1 of 1

NOTE

- Computer generated data may be used in place of this form. IF computer generated data is used, THEN ensure the data printout is attached to this procedure.
- Data for Uncontained Identified RCS Leakage may be obtained from the active Identified Reactor Coolant Leakage Logs (0PGP03-ZO-0046, Form 1) or other approved tracking methodology.
- http://www.onlineconversion.com/flow_rate_volume.htm (rounded to 7 decimal places)
1 milliliter/minute = 0.0002642 gallon/minute [US]

- 1.0 ENTER identified RCS leakage (exclude RCS leakage directed to the PRT or RCDT and Primary-to-Secondary Leakage) into table below. Calculate the total Uncontained Identified RCS Leak Rate in gpm.

Leakage Source and CR #	Leakage Rate (gpm)
N/A	N/A

Total Uncontained Identified RCS Leakage: 0 gpm

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Reactor Coolant Inventory			
Data Sheet 3	RT-8011 Particulate Channel Alert Alarm Setpoint Changes		Page 1 of 2

Initials

NOTE

- The alert alarm setpoint change must be performed at the RM-11 console in order to ensure the RM-11 Master Data Base is updated.
- Verification of alarm setpoints may be performed at the RM-11 or the RM-23A.

1.0 RT-8011 Particulate Channel Alert Alarm Setpoint Changes

- 1.1 OBTAIN Shift Supervisor authorization to change the ALERT ALARM setpoint for the RT-8011 Particulate Channel.

NOTE

IF the notification level value exceeds the maximum allowed alert alarm setpoint of 6.00 E-07 uCi/cc, THEN record 6.00 E-07 in Step 1.2.

- 1.2 RECORD the current notification level value for the RT-8011 Particulate Channel from the RCB Purge Notification Levels Form.

_____ uCi/cc

- 1.3 At the RM-11 console, PRESS the GRID 3 key.

- 1.4 Using the numeric keypad, key in 1(2)111 and PRESS the SEL key to display the grid item for RT-8011.

- 1.5 INSERT the Supervisory Key and place it in the SUPERVISOR position.

- 1.6 PRESS the LIT, GRID 5, then SEL keys to display the Supervisor RM-80 Data Base for RT-8011.

- 1.7 Using the numeric keypad, key in -10 and PRESS the SEL key to highlight the Alert Alarm.

- 1.8 RECORD the "As Found" Alert Alarm setpoint for the RT-8011 Particulate Channel.

_____ uCi/cc

This DATA SHEET, when completed, shall be retained for 5 years.

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Reactor Coolant Inventory			
Data Sheet 3	RT-8011 Particulate Channel Alert Alarm Setpoint Changes		Page 2 of 2

Initials

NOTE

The setpoint is in the form X.XX E-XX. The setpoint is automatically formatted by entering the first three digits, a + or -, and the last two digits.

1.9 Using the numeric keypad, key in the value recorded in Step 1.2 then PRESS the ENTER key. _____

1.10 Allow the RM-80 value and Master value to synchronize on the display. _____

NOTE

A printout of the monitor and channel items may be obtained by pressing the PRINT CRT key.

1.11 Record the "As Left" Alert Alarm setpoint for the RT-8011 Particulate Channel. _____

_____ uCi/cc

1.12 PLACE Supervisory Key Switch in the NORMAL position. _____

1.13 REMOVE Supervisory Key from the RM-11. _____

1.14 INDEPENDENTLY VERIFY the RT-8011 Particulate Channel Alert Alarm setpoint is the value recorded in Step 1.2. _____

Ind. Verif

NUCLEAR TRAINING DEPARTMENT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

TITLE: DETERMINE DILUTION REQUIRED FOR POWER INCREASE

JPM NO.: NRC A2

REVISION: 1

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title:	DETERMINE DILUTION REQUIRED FOR POWER INCREASE
JPM No.:	NRC A2
Rev. No.:	1
STP Task:	CRO 91471: Knowledge of how to determine appropriate water volume to lower the boron concentration.
STP Objective:	<p>CRO T11003: The student will be able to explain the nature and purpose of the boron chemical shim. He will be able to use the appropriate graphs and thumb rules to determine the requirements for borating, diluting, or blending flows to compensate for inherent reactivity effects.</p> <p>Given initial core conditions, analyze and describe the effects on core parameters, as appropriate, e.g., fission processes, reactivity variations, subcritical processes, rod worths, boron worths, and any core coefficient.</p>
Related K/A Reference:	2.1.7 (3.7) Ability to evaluate plant performance and make operational judgments on operating characteristics, reactor behavior, and instrument interpretation.
References:	0POP03-ZG-0008, Power Operations Unit 1 Plant Curve Book Nuclear Design Report, Unit 1, Cycle 14
Task Normally Completed By:	RO
Location of Testing:	Classroom
Time Critical Task:	NO
Validation Time:	25 minutes
Required Materials (Tools/Equipment):	Calculator

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 1 is currently at 75% power and is preparing to raise plant power to 100% in accordance with OPOP03-ZG-0008, Power Operations.

The following plant parameters currently exist:

Reactor Power: 75%

RCS Boron Concentration: 1500 ppm

Core Life: BOL (150 MWD/MTU)

Normal Operating Temperature and Pressure

INITIATING CUE:

The Unit Supervisor directs you to calculate the volume of RCS dilution that will be necessary to offset the Power Defect for a power escalation from 75% to 100%. Note: Ignore the effects of Xenon.

JOB PERFORMANCE MEASURE INFORMATION SHEET

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Determines RCS dilution volume is:

3149 gallons of Makeup Water \pm 125 gallons.

*{Power Defect (NDR Table 5-7): 75% (-1252.9 pcm) to 100% (-1629.4 pcm) = **-376.5 pcm.***

*Average Differential Boron Worth (NDR Table A-22) between 75% and 100% power at 1500 ppm is **-6.09 pcm/ppm.** This results in a change in boron concentration of +61.82 ppm (-376.5 pcm \div -6.09 pcm/ppm). Note that the +61.82 ppm will be removed by dilution for the power increase.*

*Final Boron concentration is then (1500 – 61.82) ppm = **1438.18 ppm.***

*Using Plant Curve Book, Fig. 3.1, Dilution Formula, with Hot Full Power mass of 622,307 lbm, gives the volume of Makeup Water required of **3149 gallons.**}*

HANDOUTS:

Student will be provided NDR Figures 5-15, 5-16, and 5-17, and Tables 5-7 and A-22 and Plant Curve Book Figure 3.1.

NOTES:

A completed Answer KEY is provided for the Evaluator. The KEY contains marked up copies of Figure 3.1 for calculating dilution (Plant Curve Book), and Figure 5-15 and Tables 5-7 and A-22 (Nuclear Design Report). **DO NOT HAND TO THE APPLICANT.**

Variations allowed on data results are based on interpretation of graphical information and possible interpolation of table values.

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1 (C)

Determine the Power Defect for power increase from 75% to 100%.

Standard:

Determines the Power Defect (as found in Table 5-7 in NDR) from 75% to 100 %

Initial Power defect (75%) = -1252.9 pcm

Final Power Defect (100%) = -1629.4 pcm

Change in Power Defect: $-1629.4 \text{ pcm} - (-1252.9 \text{ pcm}) = -376.5 \text{ pcm} \pm 5.0 \text{ pcm}$

Comment:

Cue:

Provide Applicant with JPM Handout materials.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2 (C)

Determine the Differential Boron Worth for the power change from 75 % to 100% power.

Standard:

- a) *Identifies Differential Boron Worth (DBW) (from Table A-22 in NDR)*

$$DBW (50\%) = -6.28 \text{ pcm/ppm}$$

$$DBW (100\%) = -6.03 \text{ pcm/ppm}$$

- b) *Determines DBW for 75% power*

$$\text{Average DBW (@75\%)} = (-6.28 + -6.03) \div 2 = -6.155 \text{ pcm/ppm}$$

- c) *Determines Average DBW for power change 75% to 100% (@87.5%)*

$$\text{Average DBW (87.5\%)} = (-6.155 + -6.03) \div 2 =$$

$$\mathbf{-6.09 \text{ pcm/ppm} \pm 0.10 \text{ pcm/ppm}}$$

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 3 (C)

Determine Final RCS boron concentration at 100%.

Standard:

$$C_{100\%} = C_{75\%} - \left[\frac{-376.5 pcm}{-6.09 pcm/ppm} \right] = 1500 ppm - 61.82 ppm = 1438.18 ppm$$

$$1438.18 ppm \pm 2.0 ppm$$

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4 (C)

Determine the volume of Makeup Water (gallons) to dilute the RCS (1500 ppm to 1438.18 ppm)

Standard:

Using Plant Curve Book Figure 3.1, Dilution equation, determines volume of dilution required:

$$V_w = \left(\frac{622,307}{8.318} \right) \times \ln \left(\frac{1500}{1438.18} \right) = 3149 \text{ gallons}$$

3149 gallons ± 125 gallons

Comment:

Cue:

Notes:

- TERMINATE THE JPM -

JPM STOP TIME _____

VERIFICATION OF COMPLETION

Job Performance Measure: **DETERMINE DILUTION REQUIRED FOR POWER INCREASE**

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature _____

Date _____

JPM - HANDOUT**READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Unit 1 is currently at 75% power and is preparing to raise plant power to 100% in accordance with OPOP03-ZG-0008, Power Operations.

The following plant parameters currently exist:

Reactor Power: 75%

RCS Boron Concentration: 1500 ppm

Core Life: BOL (150 MWD/MTU)

Normal Operating Temperature and Pressure

INITIATING CUE:

The Unit Supervisor directs you to calculate the volume of RCS dilution that will be necessary to offset the Power Defect for a power escalation from 75% to 100%. Note: Ignore the effects of Xenon.

NRC JPM A2 STUDENT HANDOUT

Rev. 3
STI# 31071833

TR 1248
D070912

Figure 3.1
Boration / Dilution
Unit 1
(Source: Calculation 99-RC-009)

Boration

$$V_B = \left(\frac{M}{8.4298} \right) \times \ln \left(\frac{C_{BAT} - C_{Init}}{C_{BAT} - C_{Final}} \right)$$

Where:

V_B = Volume of Boric Acid (gallons)
 M = RCS Mass (lb_m)
 C_{BAT} = Boron Concentration of BAT (ppm)
 C_{Init} = Initial Boron Concentration (ppm)
 C_{Final} = Final Boron Concentration (ppm)

Dilution

$$V_W = \left(\frac{M}{8.318} \right) \times \ln \left(\frac{C_{Init}}{C_{Final}} \right)$$

Where:

V_W = Volume of Makeup Water (gallons)
 M = RCS Mass (lb_m)
 C_{Init} = Initial Boron Concentration (ppm)
 C_{Final} = Final Boron Concentration (ppm)

Plant Condition	M RCS Mass (lb _m)
Hot Full Power	622,307
Hot Zero Power	624,461
T _{avg} = 350 °F	751,417
T _{avg} = 150 °F	828,264

Prepared By: RT Dunn Date 3-23-00
 Reviewed By: Ray S. Warren Date 3-23-00
 Approved By: RT Dunn Date 3-23-00
 Reactor Engineering Supervisor

Table 5-7 Data for Figures 5-15, 5-16 and 5-17

Total Power Defects versus Power Level
at BOL, MOL, and EOL, FOP

Total Power Defects (pcm) at 150 MWD/MTU

Boron Concentration (ppm)	0.0	25.0	50.0	75.0	100.0
Power Level (%)					
Proprietary Information Removed					

Total Power Defects (pcm) at 9000 MWD/MTU

Boron Concentration (ppm)	0.0	25.0	50.0	75.0	100.0
Power Level (%)					
Proprietary Information Removed					

Total Power Defects (pcm) at 19500 MWD/MTU

Boron Concentration (ppm)	0.0	25.0	50.0	75.0	100.0
Power Level (%)					
Proprietary Information Removed					

Table A-22 Differential Boron Worth (pcm/ppm) as a Function of Boron Concentration and Power Level at BOL, MOL and EOL

Differential Boron Worth (pcm/ppm) at 150 MWD/MTU

Boron Concentration (ppm)	0	Power Level (%) 50	100
Proprietary Information Removed			

Differential Boron Worth (pcm/ppm) at 9000 MWD/MTU

Boron Concentration (ppm)	0	Power Level (%) 50	100
Proprietary Information Removed			

Differential Boron Worth (pcm/ppm) at 19500 MWD/MTU

Boron Concentration (ppm)	0	Power Level (%) 50	100
Proprietary Information Removed			

NOTE: Data were generated assuming HFP equilibrium xenon conditions.

Figure 5-15 Total Power Defect Versus Power Level at BOL (150 MWD/MTU), FOP

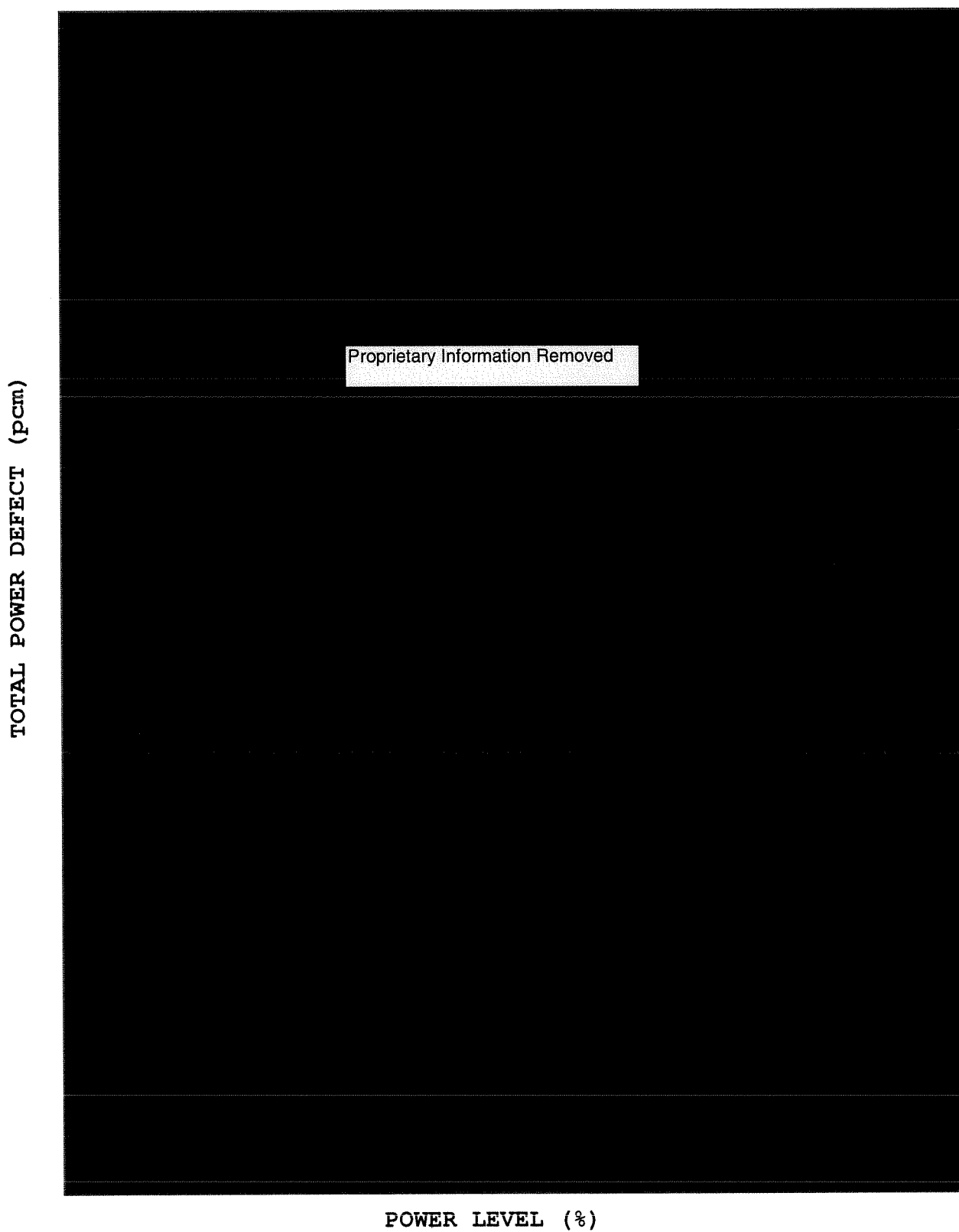


Figure 5-16 Total Power Defect Versus Power Level at MOL (9000 MWD/MTU), FOP

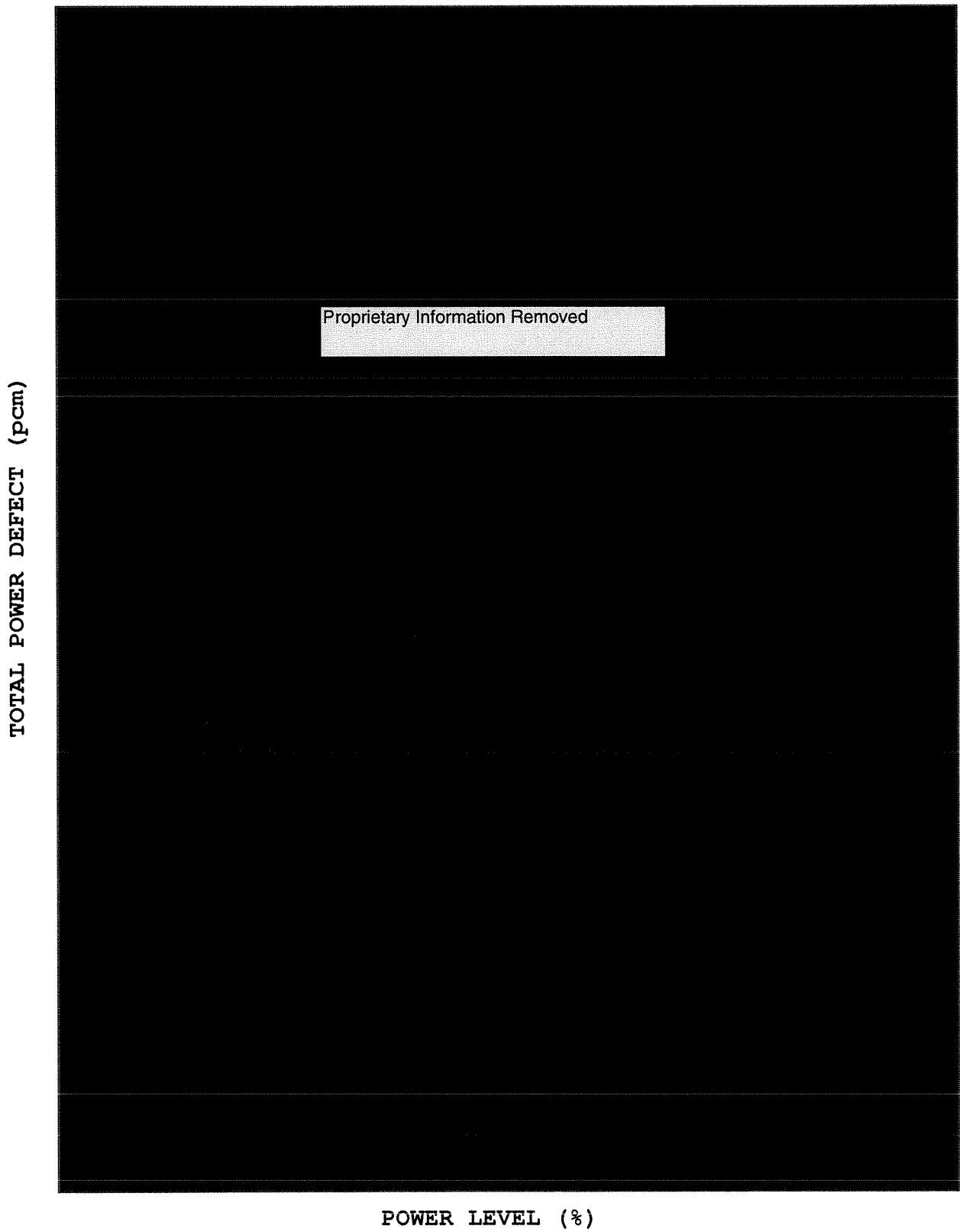


Figure 5-17 Total Power Defect Versus Power Level at EOL (19500 MWD/MTU), FOP

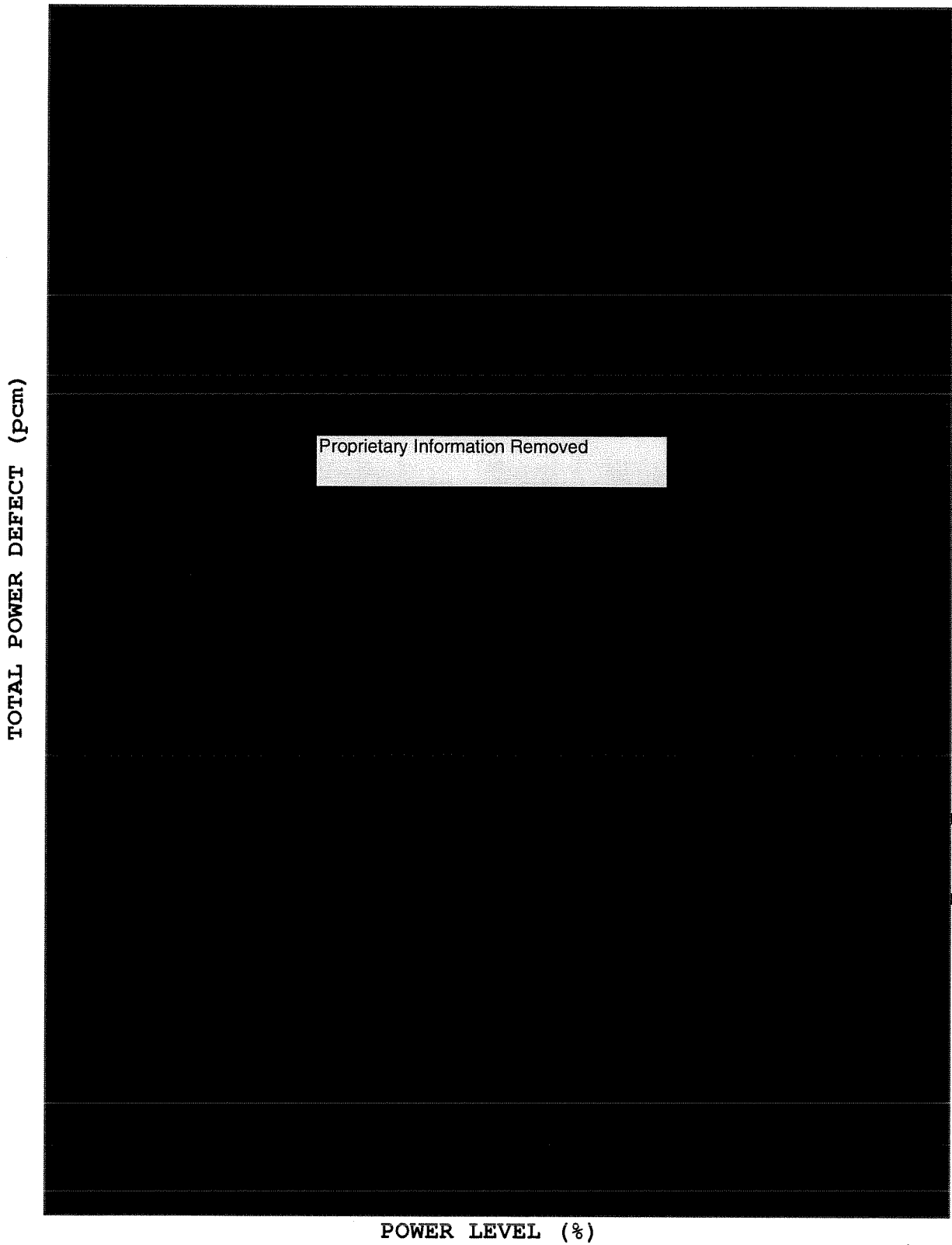


Figure 5-15

Total Power Defect Versus Power Level at BOL (150 MWD/MTU), FOP

TOTAL POWER DEFECT (pcm)

Proprietary Information Removed

POWER LEVEL (%)

KEY

See Table 5-7 for values:

100% = (-1629.4) pcm
75% = - (-1252.9) pcm
 $\Delta = -376.5$ pcm
(± 5.0 pcm)

Table 5-7 Data for Figures 5-15, 5-16 and 5-17

Total Power Defects versus Power Level
at BOL, MOL, and EOL, FOP

Total Power Defects (pcm) at 150 MWD/MTU

Boron Concentration (ppm)	Power Level (%)				
	0.0	25.0	50.0	75.0	100.0
Proprietary Information Removed					

Total Power Defects (pcm) at 9000 MWD/MTU

Boron Concentration (ppm)	Power Level (%)				
	0.0	25.0	50.0	75.0	100.0
Proprietary Information Removed					

Total Power Defects (pcm) at 19500 MWD/MTU

Boron Concentration (ppm)	Power Level (%)				
	0.0	25.0	50.0	75.0	100.0
Proprietary Information Removed					

INEL

Table A-22 Differential Boron Worth (pcm/ppm) as a Function of Boron Concentration and Power Level at BOL, MOL and EOL

Differential Boron Worth (pcm/ppm) at 150 MWD/MTU

Boron Concentration (ppm)	0	Power Level (%)	50	100
Proprietary Information Removed				

Differential Boron Worth (pcm/ppm) at 9000 MWD/MTU

Boron Concentration (ppm)	0	Power Level (%)	50	100
Proprietary Information Removed		<p>Average Differential Boron Worth</p> <p>Between 50% & 100% (@75%): $(-6.28 + -6.03) \div 2 = -6.155 \text{ pcm/ppm}$</p> <p>Between 75% & 100% (@ 87.5%): $(-6.155 + -6.03) \div 2 = -6.09 \text{ pcm/ppm}$ $(\pm 0.10 \text{ pcm/ppm})$</p>		
Proprietary Information Removed				

Differential Boron Worth (pcm/ppm) at 19500 MWD/MTU

Boron Concentration (ppm)	0	Power Level (%)	50	100
Proprietary Information Removed				

NOTE: Data were generated assuming HFP equilibrium xenon conditions.

KEY

REV. 3
STI# 31071833

KEY

TR 1248
DO70912

Figure 3.1
Boration / Dilution
Unit 1
(Source: Calculation 99-RC-009)

Boration

$$V_B = \left(\frac{M}{8.4298} \right) \times \ln \left(\frac{C_{BAT} - C_{Init}}{C_{BAT} - C_{Final}} \right)$$

Where:

V_B = Volume of Boric Acid (gallons)
 M = RCS Mass (lb_m)
 C_{BAT} = Boron Concentration of BAT (ppm)
 C_{Init} = Initial Boron Concentration (ppm)
 C_{Final} = Final Boron Concentration (ppm)

Dilution

$$V_W = \left(\frac{M}{8.318} \right) \times \ln \left(\frac{C_{Init}}{C_{Final}} \right)$$

Where:

V_W = Volume of Makeup Water (gallons)
 M = RCS Mass (lb_m)
 C_{Init} = Initial Boron Concentration (ppm)
 C_{Final} = Final Boron Concentration (ppm)

Plant Condition	M RCS Mass (lb _m)
Hot Full Power	622,307
Hot Zero Power	624,461
T _{avg} = 350 °F	751,417
T _{avg} = 150 °F	828,264

$$C_{100\%} = C_{75\%} - \left[\frac{-376.5 \text{ pcm}}{-6.09 \text{ pcm/ppm}} \right] = 1500 \text{ ppm} - 61.82 \text{ ppm} = 1438.18 \text{ ppm} (\pm 2.0 \text{ ppm})$$

$C_{initial} = 1500$
 $C_{final} = 1438.18$
 $M = 622,307$

$V_W = 3149 \text{ gals}$
 $(\pm 104 \text{ gals})$

Prepared By: RF Dunn Date 3-23-00
 Reviewed By: R. S. Wynn Date 3-23-00
 Approved By: RF Dunn Date 3-23-00
 Reactor Engineering Supervisor

KEY

NUCLEAR TRAINING DEPARTMENT
ADMINISTRATIVE JOB PERFORMANCE MEASURE

**TITLE: PREPARE AN EQUIPMENT CLEARANCE ORDER FOR CLOSED
LOOP AUXILIARY COOLING WATER PUMP #13**

JPM NO.: NRC A3

REVISION: 1

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: PREPARE AN EQUIPMENT CLEARANCE ORDER FOR CLOSED LOOP AUXILIARY COOLING WATER PUMP #13

JPM No.: NRC A3

Rev. No.: 1

STP Task: T68950, Prepare Equipment Clearances

STP Objective: CRO68950, Prepare Equipment Clearances per 0PGP03-ZO-ECO1

Related

K/A Reference: G2.2.13 [3.6/3.8] Knowledge of tagging and clearance procedures.

References:

0PGP03-ZO-ECO1, Rev. 16, Equipment Clearance Order Program
0PGP03-ZO-ECO1A, Rev. 6, Equipment Clearance Order Instructions
Piping and Instrumentation Diagram 7T249F00034 #1
Single Line Diagram 00009E0PEAA #1
Single Line Diagram 00009E0VNAK #1
0POP01-AE-0001, Rev. 15, Circuit Breaker Operation

Task Normally Completed By: RO

Method of Testing: Actual Performance

Location of Testing: N/A

Time Critical Task: NO

Validation Time: 40 minutes

See next page for Required Materials

JOB PERFORMANCE MEASURE WORKSHEET

Required Materials (Tools/Equipment):

- Equipment Clearance Order Instructions (Forms) Handout
- Piping and Instrumentation Diagram 7T249F00034 #1
- Single Line Diagram 00009E0PEAA #1
- Single Line Diagram 00009E0VNAK #1
- Single Line Diagram 00009E0AC01 # 1
- Working Copy of 0PGP03-ZO-ECO1A, Equipment Clearance Order Instructions
- Planned Maintenance Work Order

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 1 is at 100% power. You are the extra Reactor Operator on weekend duty. Mechanical Maintenance has requested that Closed Loop Auxiliary Cooling Water Pump (CLACW) #13 be tagged out for performance of scheduled PM Number 95001508. This PM will conduct an overhaul of CLACW Pump #13.

INITIATING CUE:

You are directed to manually write the clearance for the CLACW Pump #13 in accordance with 0PGP03-ZO-ECO1A, Equipment Clearance Order Instructions, isolating it at the closest boundary valves for draining. The LAN is experiencing problems and ORACLE cannot be accessed at this time. You are to take the following into account during your ECO preparation:

- 1) Restoration positions and components listed solely for restoration purposes are NOT required.
- 2) Only one set of vent and drain valves is required. The vent and drain path used should be as close to the pump as possible.
- 3) The enclosed Work Package is provided as a means of supplemental information only. It is intended to be used for determining the scope of the work and the ECO needed to facilitate that work. There are no errors in the Work Package.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Correctly writes an ECO which isolates and drains the CLACW Pump #13 in accordance with 0PGP03-ZO-ECO1A, Equipment Clearance Order Instructions.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS (refer to Required Materials):

- 1) Working Copy of 0PGP03-ZO-ECO1A, Equipment Clearance Order Instructions
- 2) Equipment Clearance Order Instructions (Forms) Handout
- 3) Planned Maintenance Work Package
- 4) Piping and Instrumentation Diagrams (P&ID) and Single Line Diagrams

NOTES:

- 1) The applicant will be provided a Working copy of 0PGP03-ZO-ECO1A, Equipment Clearance Order Instructions.
- 2) A completed Answer KEY is provided for the Evaluator. Do not hand this to the applicant.
- 3) The purpose of the Work Package is to provide a means of work scope determination for the applicant, so the applicant may determine the scope of the ECO needed for the job. It is not intended as a document with the exact work instructions for performing the job (i.e. the applicant should not be wasting time looking for completeness or errors in the PM Work Package).
- 4) Unmarked copies of the required P&IDs and Single Line Diagrams are provided for the applicant.
- 5) If the applicant asks for information for the seal water piping, inform him/her that the pump provides its own seal water and there is not a separate system for seal water.

JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Review the Work Package.

Standard:

Reviews the Work Package to determine the scope of the ECO to be written.

Comment:

- 1) When the applicant is ready to proceed, provide student copies of the following:
 - Work Package, Equipment Clearance Order Procedure (OPGP03-ZO-EC01A)
 - Equipment Clearance Order Instructions
 - Planned Maintenance Work Order (PMWO)
 - prints (4 total)
- 2) The applicant will manually write the ECO.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Prepare administrative portion of ECO.

Standard:

Ensures applicable blocks are filled in for proper documentation of ECO.

Comment:

The evaluator has answer KEY in package for comparison. All appropriate blocks should be filled in.

Cue:

Notes:

SAT/UNSAT Performance Step: 3

Correctly identify CLACW Pump #13 Control Room Handswitch (CRHS).

Standard:

Ensures CLACW Pump #13 CRHS is placed in the Pull-To-Lock (PTL) position.

Comment:

CLACW Pump #13 CRHS is located on ZCP009. The applicant may not list the handswitch number (N1ACHS6840A). The handswitch number is not required. The handswitch should be Danger Tagged.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4(C)

Correctly identify and tag out CLACW Pump #13 supply breaker.

Standard:

Ensures CLACW Pump #13 supply breaker is danger tagged in the RACKED OUT position and correctly identified as 480V Load Center 1F2, Cubicle 4C.

Comment:

Compare with Answer Key.

Cue:

Notes:

SAT/UNSAT Performance Step: 5

Correctly identify and tag out CLACW Pump #13 Motor Space Heater Supply Breaker.

Standard:

Ensures CLACW Pump #13 Motor Space Heater Supply Breaker tagged in the OFF or OPEN position and correctly identified as DPG234 Breaker 13.

Comment:

This step is optional. Applicant may choose to Danger Tag the Motor Space Heater. It is not required for the scope of work this ECO is to cover.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 6(C)

Correctly identify and tag out mechanical isolation boundary valves in the correct position.

Standard:

- 1) *Danger tags CLOSED – AC-0006, CLACW Pump #13 Discharge Valve.*
- 2) *Danger tags CLOSED – AC-0024, CLACW Pump #13 Suction Valve.*

Comment:

- 1) The applicant must provide the exact valve numbers and the correct position. The valve name may be paraphrased or shortened as desired.
- 2) Compare with Answer Key.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 7

Identify correct boundary components on ECO with a “B”.

Standard:

Identifies the following components as boundary devices by placing a “B” in the BDRY column on the applicable line item of the ECO:

- 1) 480V Load Center 1F2, Cubicle 4C, CLACW Pump #13 Supply Breaker
- 2) * DPG234 Breaker 13, CLACW Pump #13 Motor Space Heater Supply Breaker
- 3) AC-0006, CLACW Pump #13 Discharge Valve
- 4) AC-0024, CLACW Pump #13 Suction Valve

Comment:

The item marked with the “*” is an optional item.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 8(C)

Identify, list and Danger tag one set of vent and drain valves in the correct position on ECO.

Standard:

As a minimum, opens two of the following valves to provide a vent and drain path. ONE of the valves SHALL be Danger tagged and designated as a BOUNDARY (both or all three may also be Danger/Boundary designated if desired).

- *Suction Test Connection AC-0223*
- *Discharge Drain Valve AC-0191*
- *Pump Casing Vent Valve AC-0582*

Comment:

Compare with Answer Key

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 9

Determine proper execution sequence.

Standard:

Determines the minimum execution sequence as shown on KEY.

Comment:

- 1) Compare with Answer Key. Generally the CRHS and breakers should be first, the discharge valve second, and the suction valve third (but the order of the suction and discharge is not critical). The vent and drain valves should be last.
- 2) There is no requirement for the ECO preparer to number the "EXEC SEQ" blocks for expected sequence however, the applicant may fill the blocks out. By procedure, the SRO reviewer is expected to verify that ECO is written in sequential order by line item or he/she may specify exact sequence by filling out the "EXEC SEQ" blocks (the ECO Answer Key does have the "EXEC SEQ" blocks filled out).

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 10(C)

Ensure special ECO requirements are satisfied.

Standard:

Ensures the following special requirements are met: Verification Required (Independent Verification) is YES

Comment:

1) Compare with Answer Key

Cue:

Notes:

- TERMINATE THE JPM -

JPM STOP TIME _____

VERIFICATION OF COMPLETION

Job Performance Measure: PREPARE AN EQUIPMENT CLEARANCE ORDER FOR
CLOSED LOOP AUXILIARY COOLING WATER PUMP #13

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature _____

Date _____

JPM - HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 1 is at 100% power. You are the extra Reactor Operator on weekend duty. Mechanical Maintenance has requested that Closed Loop Auxiliary Cooling Water Pump (CLACW) #13 be tagged out for performance of scheduled PM Number 95001508. This PM will conduct an overhaul of CLACW Pump #13.

INITIATING CUE:

You are directed to manually write the clearance for the CLACW Pump #13 in accordance with OPGP03-ZO-ECO1A, Equipment Clearance Order Instructions, isolating it at the closest boundary valves for draining. The LAN is experiencing problems and ORACLE cannot be accessed at this time. You are to take the following into account during your ECO preparation:

- 1) Restoration positions and components listed solely for restoration purposes are NOT required.
- 2) Only one set of vent and drain valves is required. The vent and drain path used should be as close to the pump as possible.
- 3) The enclosed Work Package is provided as a means of supplemental information only. It is intended to be used for determining the scope of the work and the ECO needed to facilitate that work. There are no errors in the Work Package.

	0PGP03-ZO-ECO1A	Rev. 6	Page 100 of 112
Equipment Clearance Order Instructions			
Form 3	Equipment Clearance Order Form (Job Additions) (Typical)		Page 2 of 3

ECO Number: _____ - _____ - _____
Unit Year Number

Page _____ of _____

Job Number	Work Document WAN / CR / Procedure	Work Group	Job Addition		Ready for Work Group Acceptance	Work Group Sign ON (Print, Sign, Date Time)	Work Group Sign OFF (Print, Sign, Date Time)
			Add	SRO			
(Work Description)							
(Work Description)							
(Work Description)							
(Work Description)							
(Work Description)							

THIS FORM, WHEN COMPLETE, SHALL BE RETAINED FOR A MINIMUM OF 5 YEARS.

RMS Z10.03

Page 3 of 3

Page _____ of _____

[illegible]

Importance Factor : 2C System : AC	PMWO	PM : MM-1-95001508 WAN : 137674	MODEL # : 58665 REV # : 03.0
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SECTION I	
TAG / TPNS#: 7T241MPA0360 Component Description: CLOSED LOOP AUXILIARY COOLING WATER PUMP 13 Building: TGB ZM-16: N Lead Work Group: MM Room: 102 OTC: N Support Groups: Elevation: 29 Area/Other:	PLANT GENERATION RISK HISTORY REQ'D <div style="text-align: right; font-size: 24pt; font-weight: bold;">Dtl No: Z1.1</div>
Activity Description: OVERHAUL CLOSED LOOP COOLING PUMP 13 Scope/Intent: UNCOUPLE PUMP FROM MOTOR. DISASSEMBLE, CLEAN AND INSPECT PUMP INTERNAL COMPONENTS IAW MFR MAINTENANCE INSTRUCTIONS. REWORK/REPLACE WORN OR DAMAGED PARTS AS REQUIRED AND REASSEMBLE. VERIFY COUPLING ALIGNMENT IS WITHIN ALLOWABLE TOLERANCE; ADJUST ALIGNMENT AS NECESSARY AND RECOUPLE. THIS SHALL BE A CONDITION DRIVEN ACTIVITY WHEN REQUESTED BY SYSTEM ENGINEER BASED ON PUMP PERFORMANCE CHARACTERISTICS.	

SECTION II							
QA/QC:	9	EQ Related:	N	Frequency:	D1	Floorplug:	N
GQA Risk:	LOW	EOL Replacement:	N	Mode:	ALL		
PGR Risk:	MEDIUM	ASME XI Replace:	N	MED Train:	N		
Quality Grade:		Seismic II/I:	N/A	Rx Mgmt Lvl:		RM WAL:	
Coordinate With: WW09 AC03							
Early Start Date:		Proj Start Date: 11/09/07		Otg Indicator: AP18		Milestone:	
Late Finish				Report Grp:		LCO: N	

SECTION III
WO Comments: MMRW,DWW 4/23/04

PERFORMANCE HISTORY				OPEN FEEDBACKS	SECTION IV
WAN	COMPLETED	STATUS	DEF	FEEDBACK TYPE	COUNT
329004	03/23/07	70		MASTER INDEX	0
168492	09/26/99	70		CONDITION REPORT	0
113709	12/02/97	70			

OOS#:	WAN #	*137674*
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SECTION V			
Work Start Authority: Reactor Operations			
Component must be returned to service by: <div style="display: flex; justify-content: space-between;"> Time Date </div>	1	Original 1 st Additional 2 nd Additional	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> Signature </div> <div style="width: 45%;"> Date </div> </div>
Work Supervisor or Craft: <div style="border: 1px solid black; padding: 5px; display: flex; align-items: center;"> <div style="flex: 1;"> PM Credit Complete <input type="checkbox"/> Partial <input type="checkbox"/> </div> </div>	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> Clearance/Permits Released: YES: <input type="checkbox"/> NO: <input type="checkbox"/> N/A: <input type="checkbox"/> Work Area Clean/Tools removed: YES: <input type="checkbox"/> NO: <input type="checkbox"/> N/A: <input type="checkbox"/> Hardware is secure and intact: YES: <input type="checkbox"/> NO: <input type="checkbox"/> N/A: <input type="checkbox"/> </div> </div>		

Work Complete: PMT Complete: Operations Review Required? [YES] [NO]	<div style="display: flex; justify-content: space-between; margin-bottom: 20px;"> <div style="width: 60%; border-bottom: 1px solid black; text-align: center;">Work Supervisor Signature</div> <div style="width: 35%; border-bottom: 1px solid black; text-align: center;">Date</div> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 20px;"> <div style="width: 60%; border-bottom: 1px solid black; text-align: center;">Performer Signature</div> <div style="width: 35%; border-bottom: 1px solid black; text-align: center;">Date</div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 60%; border-bottom: 1px solid black; text-align: center;">Work Start Authority Signature</div> <div style="width: 35%; border-bottom: 1px solid black; text-align: center;">Date</div> </div>
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(OVERFLOW PAGE)

SECTION VI

Additional Text Overflow from Scope/Intent on Page 1
NONE.

TAG / TPNS

TAG / TPNS	ZM16	GQA Risk	QA/QC	Quality Grade	Service Description	Scaff	Insul	Coat
No additional subjects.								

SUPPORT GROUPS

PENETRATION PERMITS

Importance Factor : 2C System : AC	<h1 style="margin: 0;">PMWO</h1>	PM : MM-1-95001508 WAN : 137674	MODEL # : 58665 REV # : 03.0
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PERMITS / DOCUMENTATION				SECTION VII	
Housekeeping Zone	IV		Scaffolding	N	Permit #:
Cleanliness Class	C		Insulation	N	Permit #:
Confined Space	N	Permit #:N/A	Coatings	N	Permit #:
Radiation Work Permit	N	Permit #:	Charcoal Filter	N	Count: 0
Equipment Clearance	Y	Permit #:	Hot Work	N	Count: 0
Controlled System or Barrier Impairment		Count : 0	Transient Fire Load		Count: 0

M&TE Used (Documentation Required: Y)		SECTION VIII	
Description	ID Number	Cal. Due Date	
Range of Use:		Date Used:	
Range of Use:		Date Used:	
Range of Use:		Date Used:	
Range of Use:		Date Used:	
Range of Use:		Date Used:	
Range of Use:		Date Used:	
Range of Use:		Date Used:	
Range of Use:		Date Used:	
Range of Use:		Date Used:	
Range of Use:		Date Used:	
Range of Use:		Date Used:	
Range of Use:		Date Used:	
Range of Use:		Date Used:	
Range of Use:		Date Used:	

PERSONNEL PERFORMING MAINTENANCE			SECTION IX		
Name (Print)	Craft	Hrs Wkd	Name (Print)	Craft	Hrs Wkd
Name (Print)	Craft	Hrs Wkd	Name (Print)	Craft	Hrs Wkd
Name (Print)	Craft	Hrs Wkd	Name (Print)	Craft	Hrs Wkd
Name (Print)	Craft	Hrs Wkd	Name (Print)	Craft	Hrs Wkd
Name (Print)	Craft	Hrs Wkd	Name (Print)	Craft	Hrs Wkd
Name (Print)	Craft	Hrs Wkd	Name (Print)	Craft	Hrs Wkd
OPTIMUM CREW SIZE:_____			TOTAL HOURS:_____		

Importance Factor : 2C System : AC	PMWO	PM : MM-1-95001508 WAN : 137674	MODEL # : 58665 REV # : 03.0
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SPARE PARTS / MATERIAL USED

SECTION X

Parts Page Printed on: 11/03/2007 09:08:07

Stock Code	MCC	RIR/ISN MAF	L V	Qty Req'd	Spare Parts Description	ASME	Qty Used
501-12809	D9		2	2 EA	HOUSING, BEARING, CLASS 30 GRAY IRON SERIAL NO: 0279-82/83/84		
501-15318	D9		3	2 EA	O-RING, (ITEM 2)		
501-15319	D9		3	1 EA	RING, PRIMARY, (ITEM 3)		
501-15878	D9		3	1 EA	BELLOWS, (ITEM 4)		
501-15879	D9		3	1 EA	RETAINER, (ITEM 5)		
501-15880	D9		3	1 EA	SPRING, ITEM 6		
501-15881	D9		3	1 EA	DISC		
501-15882	D9		3	1 EA	BAND, DRIVE		
501-15883	D9		3	1 EA	SETSCREW, #9 - 24 X 5/16 IN		
501-15884	D9		3	1 EA	HOLDER, SPRING, (ITEM 10)		
501-15885	D9		3	1 EA	GASKET, GLAND, 3.562 IN ID X 4.562 IN OD X .061 IN THK		
501-15886	D9		3	1 EA	COLLAR, (ITEM 12)		
501-15887	D9		3	1 EA	RING, MATING, ITEM NO 1		
501-18387	D9		2	1 EA	COUPLING, COMPLETE, WOODS SURE FLEX SPACER CPL NO 10SC		
501-3331	D2		2	4 SF	GASKET, SHEET, 1/64 IN THK, 60 IN SQ, GARLOCK 3000 COMPRESSED NON-ASB		
501-37738	C1		1	3 EA	GASKET, FLANGE, FLEX TYPE CG, 1/2 IN, 300/400/600 LBGASKET DIMENSIONS		
501-38469	D9		3	2 SF	PLATE, 2 X 48 X 120		
501-47059	C4		2	3 OZ	LUBRICANT, GREASE, MOBILITH SHC 100 GREASE, 12.5 OZ TUBE, 40 TUBES PER		
501-51185	D9		1	2 EA	SEAL, MECHANICAL, CARTRIDGE, INSIDE, SINGLE, 2.625 IN, SPECIAL X-100D		
501-5694	B3		2	2 EA	PIN, TAPER, # 6 X 1.75 IN LG		
560-93001	F4		2	1 OZ	LUBRICANT, ANTI-SIEZE, IN 8 OZ. BRUSH TOP CAN		
560-97004	X4		2	1 OZ	SEALANT, FORM-A-GASKET, 7 OUNCE TUBES (LOCTITE OR PERMATHEX #2)		
583-1633	D9		1	1 EA	SEAL, LIP, CLOSURE, GARLOCK NO. 63 X 643		
583-2395	D9		2	1 EA	IMPELLER		
583-2396	D7		2	1 EA	SHAFT, PUMP		
583-2397	D9		2	1 EA	KEY		
583-2398	D9		2	1 EA	KEY, COUPLING		
583-620	D9		1	1 EA	GASKET, MAIN PARTING FLANGE		
583-621	D9		1	2 EA	GASKET, (COVER TO HOUSING), ITEM # 262		
583-622	D9		1	2 EA	BEARING, BALL, THRUST & RADIAL		
583-623	D9		2	1 EA	PIN, ROLL, FOR BHN 352/444, IR 20K, ITEM NO.6		
583-624	D9		1	1 EA	SLEEVES, SHAFT, AISI TY		
583-625	D9		1	1 EA	O-RING, SHAFT SLEEVE AND NUT, ITEM NO 456		
583-626	D7		1	1 EA	RING, SEAL		
583-627	D7		1	1 EA	RING, SEAL		
583-628	D7		1	1 EA	FLINGER, (UNIVERSAL NUMBER CNN 60300290)		

Importance Factor : 2C System : AC		PMWO			PM : MM-1-95001508 WAN : 137674	MODEL # : 58665 REV # : 03.0	
Stock Code	MCC	RIR/ISN MAF	L V	Qty Req'd	Spare Parts Description	ASME	Qty Used

MATERIAL REQUEST					
RPD # / New Part	RIR/ISN MAF	L V	Quantity Requested	Material Description	Qty Used
NONE.					

1.0 PREREQUISITES

1.01 GENERAL

1.1.1 Perform Pre-Job Briefing. _____/_____
INITIALS DATE

1.1.2 The location of this Pump is: TGB South West Corner.

1.02 SPECIAL TOOLS / EQUIPMENT

CAL REQ

1.02.01	(2) 1/2" EYEBOLTS	N
1.02.02	TORQUE WRENCH RANGE TO BE DETERMINED BY FOREMAN	Y
1.02.03	3/8" ALLEN WRENCH	N
1.02.04	3/4",15/16",1-1/16" COMBINATION WRENCHES	N
1.02.05	9/16",3/4",15/16" SOCKETS AND RATCHET	N
1.02.06	0-1" OD MICROMETER	Y
		NONE
1.02.07	1"-2" OD MICROMETER	Y

2.0 PRECAUTIONS

** S . T . A . R . **

SECTION XIa

PRIOR TO STARTING ANY WORK ACTIVIES, RECORD THE TAG / TPNS NUMBER(S), UNIT NUMBER, AND THE TRAIN / CHANNEL DESIGNATOR FROM THE COMPONENT(S) USING SELF-VERIFICATION TECHNIQUES AND ENSURE THE RECORDED INFORMATION MATCHES THE INFORMATION ON THIS DOCUMENT. UNUSED BLOCKS DO NOT REQUIRE N/A.

1) UNIT # : _____	TRAIN/CH : _____	TAG/TPNS# : _____
INITIAL: _____	DATE: _____	
2) UNIT # : _____	TRAIN/CH : _____	TAG/TPNS# : _____
INITIAL: _____	DATE: _____	
3) UNIT # : _____	TRAIN/CH : _____	TAG/TPNS# : _____
INITIAL: _____	DATE: _____	
4) UNIT # : _____	TRAIN/CH : _____	TAG/TPNS# : _____
INITIAL: _____	DATE: _____	
5) UNIT # : _____	TRAIN/CH : _____	TAG/TPNS# : _____
INITIAL: _____	DATE: _____	
6) UNIT # : _____	TRAIN/CH : _____	TAG/TPNS# : _____
INITIAL: _____	DATE: _____	
7) UNIT # : _____	TRAIN/CH : _____	TAG/TPNS# : _____
INITIAL: _____	DATE: _____	
8) UNIT # : _____	TRAIN/CH : _____	TAG/TPNS# : _____
INITIAL: _____	DATE: _____	
9) UNIT # : _____	TRAIN/CH : _____	TAG/TPNS# : _____
INITIAL: _____	DATE: _____	
10) UNIT # : _____	TRAIN/CH : _____	TAG/TPNS# : _____
INITIAL: _____	DATE: _____	
11) UNIT # : _____	TRAIN/CH : _____	TAG/TPNS# : _____
INITIAL: _____	DATE: _____	
12) UNIT # : _____	TRAIN/CH : _____	TAG/TPNS# : _____
INITIAL: _____	DATE: _____	
13) UNIT # : _____	TRAIN/CH : _____	TAG/TPNS# : _____
INITIAL: _____	DATE: _____	
14) UNIT # : _____	TRAIN/CH : _____	TAG/TPNS# : _____
INITIAL: _____	DATE: _____	

3.0 WORK INSTRUCTIONS

- 3.01 DISCONNECT ASSOCIATED SEAL PIPING, ENSURE TO MATCHMARK AND LABEL EACH PIECE REMOVED. COVER ALL OPENINGS.
- 3.02 REMOVE THE COUPLING GUARD.
- 3.03 UNCOUPLE THE PUMP FROM THE MOTOR.
- 3.04 DISASSEMBLE THE PUMP PER THE VENDOR MANUAL. CLEAN AND INSPECT PUMP INTERNALS.

NOTE

ENSURE THAT ALL GREASE IS REMOVED FROM
THE BEARING CAVITY

- 3.04.01 REWORK/REPLACE WORN AND DAMAGED PARTS, AS REQUIRED.
- 3.04.02 PERFORM A BALANCE CHECK ON THE PUMP IMPELLER, SHAFT, AND COUPLING, ASSEMBLED TOGETHER AS A UNIT. IF IT IS OUT OF BALANCE, REBALANCE THE SHAFT ASSEMBLY PRIOR TO REASSEMBLY OF THE PUMP.

- *** MVP ***
- 3.04.03 PERFORM CLEANLINESS INSPECTIONS OF PARTS PRIOR TO REASSEMBLY.

_____ MVP/SIGNATURE	_____ DATE
------------------------	---------------

- 3.05 REASSEMBLE THE PUMP IN ACCORDANCE WITH THE VENDOR MANUAL.

NOTE

THE BEARINGS FOR THIS PUMP ARE SEALED
BEARINGS, DO NOT GREASE.

- 3.06 CHECK ALIGNMENT AND ALIGN IF NECESSARY IN ACCORDANCE WITH VENDOR MANUAL AND PMI-MM-ZG-0002.
- 3.07 REINSTALL COUPLING GUARD.
- 3.08 REINSTALL ASSOCIATED SEAL PIPING USING NEW GASKETS. TORQUE FLANGES IAW 0PMP02-ZG-0004.

*	NOTE	*
*	-----	*
*	THE FOLLOWING STEPS ARE REQUIRED	*
*	FOR POST MAINTENANCE TESTING.	*
*		*
*		*

- 3.09 CONTACT VIBRATION ANALYSIS GROUP TO PERFORM A BASELINE VIBRATION ANALYSIS DURING THE POST MAINTENANCE TESTING.
- 3.10 RELEASE EQUIPMENT CLEARANCE AND REQUEST OPERATIONS TO RUN THE PUMP.
- 3.11 WHILE PUMP IS RUNNING INSPECT FOR THE FOLLOWING:
 - 3.11.01 EXCESSIVE VIBRATION.
 - 3.11.02 UNUSUAL NOISES.
 - 3.11.03 PROPER OPERATION.
- 3.12 DOCUMENT RESULTS OF POST MAINTENANCE TEST IN SECTION 14.
- 3.13 NOTIFY FOREMAN OF ANY PROBLEMS PRIOR TO INITIATION OF CORRECTIVE ACTION.

Importance Factor : 2C
System : AC

PMWO

PM : MM-1-95001508
WAN : 137674

MODEL # : 58665
REV # : 03.0

SECTION Xib

4.0 References

4.01 Implementation References

	<u>Document Reference</u>	<u>Sheet</u>	<u>QCIP</u>	<u>Description</u>
NONE				

4.02 Source Documents

	<u>Document Reference</u>	<u>Sheet</u>	<u>QCIP</u>	<u>Description</u>
NONE				

Importance Factor : 2C
System : AC

PMWO

PM : MM-1-95001508
WAN : 137674

MODEL # : 58665
REV # : 03.0

SECTION XIc

5.0 Documentation

5.1 Data Sheets PMI-MM-ZG-0002.

5.2 Data Sheets PMI-MM-ZG-0106

STUDENT HANDOUT

MODEL # : 58665
REV # : 03.0

Importance Factor : 2C
System : AC

PMWO

PM : MM-1-95001508
WAN : 137674

MODEL # : 58665
REV # : 03.0

STUDENT HANDOUT

Importance Factor : 2C System : AC	PMWO	PM : MM-1-95001508 WAN : 137674	MODEL # : 58665 REV # : 03.0
---------------------------------------	-------------	------------------------------------	---------------------------------

DOCUMENT / RECORD REQUEST

REQUESTED BY :	JONES, THOMAS ALAN			DATE :	2007/11/03 09:00:56	
DEVISION / DEPT :	MECHANICAL MAINTENANCE	PHONE # :	4567	LOCATION :		
WORK ORDER # :	137674	PICK UP :	<input checked="" type="checkbox"/>	MAIL OUT :	<input type="checkbox"/>	MAIL CODE :
EMERGENCY : <input type="checkbox"/>	URGENT : <input type="checkbox"/>		WIP : <input type="checkbox"/>		ROUTINE : <input checked="" type="checkbox"/>	
INFO ONLY : <input type="checkbox"/>	WORKING COPY : <input checked="" type="checkbox"/>		ALL AMENDMENTS ? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
LIST REQUIRED AMENDMENTS :						
SPECIAL INSTRUCTIONS : CURRENT REVISIONS						

Qty	Document Number	Sheet	Revision	Location	Description

DC / RM PERSONNEL	
Date/Time Received :	Date/Time Completed :

STI 32174628	0PGP03-ZO-ECO1A	Rev. 6	Page 1 of 112
Equipment Clearance Order Instructions			
Quality	Safety-Related	Usage: Referenced	Effective Date: 06/14/07
J. King	L. Sterling	Site Personnel	Operations
PREPARER	TECHNICAL	USER	COGNIZANT DEPT.

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Usage

1 - IN HAND

2 - IN HAND CONTROLLING STATION

3 - REFERENCED

4 - AVAILABLE

Equipment Clearance Order Instructions

1.0 Purpose and Scope

- 1.1 This document provides detailed instructions on implementation of the Equipment Clearance Order (ECO) program. It will guide you through an ECO in either the Oracle software or if performed manually. Refer to 0PGP03-ZO-ECO1 for program requirements.

2.0 References

2.1 UFSAR:

- 2.1.1 Section 9.1.3.1.2 (USQE 92-0010)
- 2.1.2 Section 13.5.1.3, Procedures (LCTS# 8500374-936)

2.2 SPR/CRs:

- 2.2.1 870493 ECO Not Adequate For Employee Protection, MATS# 8800418-860
- 2.2.2 890043 Partial LOOP when Main Generator Breaker Inadvertently Closed
- 2.2.3 890256 Improperly Installed Fuse, LCTS 8900607-936
- 2.2.4 892626 Define Acceptor, Emergency & Issuing Authority
- 2.2.5 900265 Danger Tag Added To ECO Without Notification Of Acceptor, MATS# 9000651-936
- 2.2.6 900265 Failure To Notify Issuing Authority Upon Change To An ECO, MATS# 9000651-936
- 2.2.7 900407 Contract Mechanic Was Sprayed With Sulfuric Acid, MATS#9001040-936
- 2.2.8 900467 Minor RCS Spill During Flood Up, MATS# 9001269-936
- 2.2.9 910039 CVCS Spill Due to Inadequate Clearances
- 2.2.10 910039 Inadequate Clearance Resulting in Contaminated Spill, MATS# 9100143-936
- 2.2.11 910065 13.8 Auxiliary Bus 1G PT Fuses Inadvertently Pulled, MATS# 9100210-936/866
- 2.2.12 910120 Mechanics Sprayed With RSAR Water/Resin Mixture, MATS# 9100398-936/866

Equipment Clearance Order Instructions

2.2.13	910283	Safety Valve Flange Unbolted For ECO
2.2.14	920586	Waive Requirements of Independent Verification
2.2.15	921035	Tag Lift Permit Problems During MOVATS Testing
2.2.16	921097	Acceptor to Ensure Adequate Component Draining
2.2.17	921359	Check Valves as BOUNDARY Valves for an ECO
2.2.18	931013	Procedure Usage Requirement for ECO Restoration
2.2.19	931682	IA System Jurisdictional Controls
2.2.20	931906	ECO Notification Form Deletion
2.2.21	931919	Review of Closed ECO-Procedural Direction for Blank Spaces
2.2.22	931945	Add Construction Potable Chlorine Injection System to Chemically Hazardous Systems
2.2.23	932054	Caution Tags Older Than 6 mo. (QA Audit 93-02)
2.2.24	930170	Use of Valve Wrenches Cracking MOV Actuators
2.2.25	932506	Security Incidents Caused by Inadequate Notice From Operations
2.2.26	932575	Loose Contacts of Buchanan-358 Fuse Blocks
2.2.27	932722	Adverse ECO Trend
2.2.28	932785	Acceptor Training Requirements
2.2.29	932946	Water Spill Due to ECO BOUNDARY Revision Problems
2.2.30	932996	ECO Tags Hung With Inadequate Information or Deteriorated
2.2.31	940117	Electrician Shocked by Bus Cleared for Work by ECO
2.2.32	940159	ECO Miscommunication Causes Damage to MOV Motor
2.2.33	933557	Security Inverter Not Put Back in Service Per Procedure
2.2.34	941284	ED-0382 is Not Included in a Procedure-Was Found in Incorrect Position
2.2.35	941401	ECO Adverse Trend

Equipment Clearance Order Instructions

- 2.2.36 941673 Essential Chiller 12C Outlet Isol Valve 1-CH-0607 Found Out of Required Valve Position
- 2.2.37 958921 Clearance BOUNDARY Problems during change to WMT ECO
- 2.2.38 9714190 Fire Protection Valve IRC 1-FP-0945 Released in the CLOSED position during ECO revision
- 2.2.39 9718629 Tagout attachment devices and tags don't meet OSHA requirements
- 2.2.40 981409 Quality Audit of ECO Program Findings
- 2.2.41 982008 Acid Leak in Unit 1
- 2.2.42 9812247 Feedwater Heater 15B BOUNDARIES not properly tagged out
- 2.2.43 035914 Maintenance Improvement Team recommendations for CR 03-6291
- 2.2.44 036291 Condensate Pump 12 recoupled without BOUNDARIES isolated
- 2.2.45 043110 Danger tag revised to Test tag
- 2.2.46 043111 Trend in ECO Performance
- 2.2.47 049990 Degraded strings on ECO tags
- 2.2.48 0415251 Limit Number of ECO Tags in RCB
- 2.2.49 052079 SGFPT 23 Valves on SGFPT 21 ECO
- 2.2.50 053071 LER 02-05-0003 (SSPS ECO Error)
- 2.2.51 0511881 Mispositioned Components Adverse Trend
- 2.2.52 075744 Equipment Clearance Order (ECO) Hung on Incorrect Solid State Protection System (SSPS) Power Supply

2.3 SERs & SOERs:

- 2.3.1 SER 81-051, SFP Watertight Gate Seals
- 2.3.2 SER 81-064, Reactor Coolant Leak Due to Technician Error
- 2.3.3 SER 84-056, Mispositioning of Valves and Controls Disabled Safety Systems
- 2.3.4 SOER 85-02, Valve Mispositioning due to Human Error
- 2.3.5 SOER 83-09, Valve Inoperability due to Motor Operator Failure
- 2.3.6 SER 2-98, Recurring Electrical Shock Events

Equipment Clearance Order Instructions

2.4 IENs:

- 2.4.1 79-035 Control of Maintenance & Essential Equipment
- 2.4.2 84-039 Inadvertent Isolation of Containment Spray Systems, MATS# 8502413-936
- 2.4.3 84-039 Inadvertent Isolation of CS System, MATS# 8500012-866
- 2.4.4 84-046 Verify Physical Condition of Breakers When Restoring Clearance, MATS# 8400055-860, 8402181-936
- 2.4.5 84-051 Independent Verification, MATS# 8402186-936
- 2.4.6 84-058 Inadvertent Defeat of Safety Function by Human Error
- 2.4.7 84-076 Loss of all AC Power, MATS# 8500129-936
- 2.4.8 85-051 Inadvertent Loss or Improper Actuation of Safety-Related Equipment, MATS# 8501546-936

2.5 OMRs:

- 2.5.1 81-008 De-energizing DC or AC SFAS, MATS# 8500279-936
- 2.5.2 86-298 Unmonitored Release From Boric Acid Hold Tank, MATS# 8600694-936
- 2.5.3 87-314 Steam Intrusion Into Main Condenser During Maintenance, MATS# 8700418-936

2.6 NRC & INPO Reports:

- 2.6.1 NRC Q032.42, Verify Position of Transformer Taps and Manual Bypass Circuit Breakers After Maintenance and Testing, MATS# 8601313-936
- 2.6.2 NRC Q640.13N, Corrective Actions Required for Instrument Setpoint Drift, MATS# 8601463-936
- 2.6.3 INPO 01-002, Guidelines For The Conduct Of Operations At Nuclear Power Stations

Equipment Clearance Order Instructions**2.7 Miscellaneous Reports or References:**

- 2.7.1 ANSI N.18.7-1976, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants
- 2.7.2 Operations Quality Assurance Plan (OQAP)
- 2.7.3 DR 86-027, Combining Clearances, MATS# 8601037-860
- 2.7.4 ST-AE-HL-90904, NRC Inspection Report 86-05, MATS# 8601188-860
- 2.7.5 NOI 87-08-46, Authority to Release Equipment, MATS# 8700448-860
- 2.7.6 Response to ISEG Report 91-11, ST-HS-15135
- 2.7.7 ST-HL-AE-1950, Response to Electrical Systems Audit (LCTS# 8801605-936)
- 2.7.8 OTH 93-006, Containment Purge Valve Event
- 2.7.9 ST-HL-AE-4895, Response to NRC Inspection Report 94024
- 2.7.10 OTH 93-097, Clearance Release Problem
- 2.7.11 NTD027, ECO Acceptor Training
- 2.7.12 29 CFR 1910.269, Occupational Safety and Health Standards, Electric power generation, transmission and distribution
- 2.7.13 10 CFR 50 Appendix B
- 2.7.14 NRC Generic Letter 91-18
- 2.7.15 NTD028, ECO Plant Operations Training
- 2.7.16 Conduct Of Operations

Equipment Clearance Order Instructions**2.8 Procedures:**

- 2.8.1 0POP01-AE-0001 (Circuit Breaker Operation)
- 2.8.2 0PGP03-ZA-0010 (Performing and Verifying Station Activities)
- 2.8.3 0PGP03-ZA-0078 (Administration of the Radiation Monitoring System)
- 2.8.4 0PGP03-ZI-0007 (Confined Space Entry Program)
- 2.8.5 0POP01-ZA-0001 (Plant Operations Department Administrative Guidelines)
- 2.8.6 0PGP03-ZM-0021 (Control of Configuration Changes)
- 2.8.7 0PGP04-ZE-0312 (Design Change Implementation)
- 2.8.8 0PGP03-ZO-0003 (Temporary Modifications)
- 2.8.9 0PGP03-ZO-ECO1, (Equipment Clearance Order Program)
- 2.8.10 0PGP03-ZI-0021 (Electrical Safety)
- 2.8.11 0PGP03-ZA-0109 (Configuration Management Program)
- 2.8.12 0PGP03-ZA-0090 (Work Process Program)
- 2.8.13 0POP01-ZA-0015 (Plant Operations Quality Records)

Equipment Clearance Order Instructions**3.0** Definitions

- 3.1 **ACCEPT:** To establish co-ownership or control of an ECO. By **ACCEPTING** an ECO, the **ACCEPTOR** verifies that the ECO, as written, provides adequate personnel and equipment protection for the work being signed for.
- 3.2 **ACCEPTOR:** A **QUALIFIED INDIVIDUAL**, designated by their Department or Division Manager, who is required to **ACCEPT** an ECO for a **WORK GROUP**. A designee **MAY** perform the responsibilities (e.g., ECO walkdown) of an **ACCEPTOR** provided they are a **QUALIFIED INDIVIDUAL** from the same **WORK GROUP**. (Reference Steps 2.2.4 and 2.2.28)
- 3.3 **ALIGN:** To place a component in a designated configuration. Permission to **ALIGN** a component is given by the **OPERATIONAL AUTHORITY**.
- 3.4 **BREACH:** The act of making an initial opening into a vessel or pipe through a bolted, threaded or welded connection or plate. Opening vent and drain valves to depressurize or drain a component is not considered a system **BREACH** for the purposes of this procedure.
- 3.5 **BREAKER RACKING TAG:** A tag controlled by 0POP01-AE-0001 (Circuit Breaker Operation) placed on the control room handswitch for load center or switchgear breakers to provide for personnel protection while racking operations are in progress.
- 3.6 **BOUNDARY:** A device or component that is required to isolate, block in, deenergize and/or depressurize a component for personnel safety or equipment protection.
- 3.7 **CAUTION TAG:** A tag placed on or near a component to provide temporary operating restrictions, temporary configuration control, or information. This tag **SHALL NOT** be used where personnel injury or equipment damage could reasonably occur if the instructions on the tag were not followed. (Yellow Tag)
- 3.8 **DANGER TAG:** Prevents manipulation of a component or system to prevent personnel injury or equipment damage. **DANGER TAGS** are normally hung on the main control points and **BOUNDARY** control points to isolate equipment from all sources of energy and permit work to be safely performed (e.g., close and tag suction/discharge valve, open and tag associated suction/discharge valve breaker). (Red Tag).
- 3.9 **ECO INDEX:** The mechanism used to track the status of Temporary (Manual) ECOs.

Equipment Clearance Order Instructions

- 3.10 **EMERGENCY:** A condition that would cause any of the following (Reference Step 2.2.4):
- Significant hazard to personnel that can be avoided by the RELEASE of a clearance.
 - Significant equipment damage.
 - Failure to comply with a Technical Specifications Action Statement.
 - Degradation of Engineered Safeguards Features.
 - Further escape of effluents.
 - The Shift Supervisor may declare that an emergency exists whenever, in their judgment, the plant conditions warrant it. During an emergency, the Shift Supervisor has the authority and takes responsibility for authorized deviations from the requirements of this procedure.
- 3.11 **EQUIPMENT CLEARANCE ORDER (ECO):** The administrative process, forms, reports, computerized ECO process and tags that are used to accomplish the purpose and scope of this procedure. (Reference Step 2.2.21)
- 3.12 **GROUND:** Device(s) designed to maintain or reduce the potential of the conducting components of equipment equal to earth's potential. This includes any solid or stranded conductor, 18 AWG or larger, connected directly between the current carrying surface of electrical distribution equipment and earth GROUND. Conductors smaller than 18 AWG or connected to approved test equipment are not included in this definition.
- 3.13 **HAZARDOUS SOURCES OF ENERGY:** Energy sources (e.g., electricity, steam, high temperature fluids, acids, caustics, high pressure systems, cryogenic fluids, etc.) which pose a potential threat to the safety of personnel and equipment.
- 3.14 **HAZARDOUS SYSTEM:** Any system which can not be drained and/or depressurized to meet the pressure and temperature limits provided in this step, and the portions of any systems containing HAZARDOUS SOURCES OF ENERGY.
- 3.14.1 Systems containing fluid conditions of greater than 150 psig or greater than 200°F.
- 3.14.2 The following systems, or some portions of the following systems, are considered hazardous (the OPERATIONAL AUTHORITY should be contacted for identification of specific portions of systems that are to be considered hazardous): (Reference Step 2.2.22)
- Acid Storage and Transfer (AD)
 - Caustic Storage and Transfer (CA)
 - Chemical Feed (CF)
 - High pressure and regeneration portions of Condensate Polishing (CP)

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- Electrohydraulic Control (EH)
- Nonradioactive Chemical Waste (NC)
- Sodium Hypochlorite (SH)
- Hydraulic Fluid for the Feedwater Isolation Valves (FW)
- Hydraulic Fluid for the Steam Generator PORVs (MS)
- Chemical Feed portion of Liquid Waste Processing System (WL)
- Regeneration portions of Demineralized Water System (DW)
- Hydrogen (HY)
- Liquid Nitrogen (NL)

- 3.15 **IMMEDIATE SUPERVISOR:** The next higher level of management that a person reports to (directly or indirectly). Any Temporary/Supervisor, First Line Supervision or above is considered the IMMEDIATE SUPERVISOR for all subordinates within their discipline (Reference Step 2.2.4).
- 3.16 **ISSUING AUTHORITY:** An individual possessing a Nuclear Regulatory Commission (NRC) Senior Reactor Operator (SRO) license for STPEGS who directs tagging operations. (Reference Steps 2.2.4, 2.7.5).
- 3.17 **LOCKED COMPONENT:** As defined in 0POP01-ZA-0001 (Plant Operations Department Administrative Guidelines).
- 3.18 **OPERATIONAL AUTHORITY:** The supervisor in direct control over the operation of a component or system. The OPERATIONAL AUTHORITY for the following are:
- | | |
|-------------------------|--|
| • Operations Equipment | Unit/Shift Supervisor |
| • Facilities Management | Manager of Facilities Equipment Management or designee |
| • Chemistry | Chemical Technician Supervisor |
| • Maintenance Equipment | Applicable Maintenance Discipline Supervisor |
- 3.19 **PERFORMER:** A QUALIFIED INDIVIDUAL designated by the ISSUING AUTHORITY who manipulates components and hangs/releases tags.
- 3.20 **PERSONNEL SAFETY REDUCTION:** Conditions, which could result in unacceptable exposure to injury.
- 3.21 **PREPARER:** A QUALIFIED INDIVIDUAL designated by the ISSUING AUTHORITY who prepares ECOs and ECO revisions.
- 3.22 **QUALIFIED INDIVIDUAL:** An individual that has successfully completed a department training course in accordance with the Training Section of 0PGP03-ZO-ECO1.

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- 3.23 RELEASE: The act of relinquishing control of an ECO or selected tags (i.e., removing the ECO or ECO tags protecting a worker's personal safety or protecting plant equipment).
- 3.24 REQUESTER: The individual initiating or desiring a change to an ECO.
- 3.25 REQUIRED POSITION: The position the component is required to be in to provide protection and safety, allow start of initial testing or troubleshooting, or temporary configuration control of plant components.
- 3.26 SEQUENCING OF TAGS: The order in which a component is removed or returned to service within an ECO.
- 3.27 SIGNIFICANT RADIATION EXPOSURE: Conditions that could result in a personnel exposure of 10 mRem or greater to complete a task.
- 3.28 TECHNICAL REVIEWER: An individual possessing an NRC Senior Reactor Operator (SRO) License or SRO certification for STPEGS OR a QUALIFIED INDIVIDUAL designated by Operations Management who reviews ECOs and ECO revisions for adequacy. For reviews of safety related equipment ECOs and ECO revisions, the reviewer SHALL possess an SRO License or SRO certification for STPEGS.
- 3.29 TEST TAG: A tag placed on components when a position must be changed during the performance of troubleshooting, testing or maintenance activities. (Blue Tag with a red border)
- 3.29.1 A TEST TAG is "owned" by the individual responsible for the WORK DOCUMENT listed on the tags. This person **SHALL** be in the WORK GROUP listed on the tag.
- 3.29.2 A component **SHALL NOT** be tagged with a TEST TAG unless a WORK GROUP and WORK DOCUMENT are listed on the TEST TAG.
- 3.30 VERIFICATION: As defined in 0PGP03-ZA-0010: (Reference Steps 2.2.14, 2.2.28, 2.4.5 and 2.7.11)
- INDEPENDENT VERIFICATION
 - DIRECT INDEPENDENT VERIFICATION
 - INDIRECT INDEPENDENT VERIFICATION
 - DUAL VERIFICATION
- 3.30.1 For the performance of unrestricted INDEPENDENT VERIFICATIONS as related to this procedure, an individual who has successfully completed NTD 028.

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- 3.30.2 For the performance of hanging tags and restricted INDEPENDENT VERIFICATIONS as related to this procedure, for LLRTs only, an individual who is qualified to perform LLRTs (certification 2200).
- 3.30.3 For the performance of hanging tags and restricted INDEPENDENT VERIFICATIONS as related to this procedure, for electrical grounding only, an individual who is qualified to install grounding devices (certification 1039 or 6000).
- 3.31 VERIFIER: A QUALIFIED INDIVIDUAL designated by the ISSUING AUTHORITY who performs INDEPENDENT/DUAL verification as required.
- 3.32 WORK DOCUMENT: A document that provides for physical work at STPEGS. Examples can include a prepared work package, preventive maintenance package, condition report, surveillance or operating procedure that directs physical changes to the equipment under clearance.
- 3.33 WORKER: An individual being protected by an ECO.
- 3.34 WORK GROUP: The designation of the division or group performing work as allowed by a specific WORK DOCUMENT.
- 3.35 WORK PRACTICES: Required preparations that promote personnel and equipment safety. For ECO purposes, the following are examples of Good Work Practices for all personnel: (Reference Step 2.8.10).
- ECO Walkdown (Print review, system depressurized, deenergized, tags hung on correct equipment and placed in proper configuration.)
 - Electrical (verifying equipment deenergized)
 - Use of approved test equipment (voltmeter)
 - Use of Hot Line Indicator
 - Compliance with STPEGS Personal Safety Program.

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4.0 Notes and Precautions

- 4.1 Violations of the ECO process MAY result in disciplinary action up to, and including, termination or denial of site access.
- 4.2 **ALL WORK IS TO BE CONDUCTED IN A SAFE MANNER. EACH WORKER IS ULTIMATELY RESPONSIBLE FOR THEIR PERSONAL SAFETY AS WELL AS THEIR FELLOW WORKER'S SAFETY.**
- 4.3 IF a discrepancy is found or any questions during execution, verification, acceptance or release of an ECO, THEN the following SHALL be performed:
- 4.3.1 **STOP**
- 4.3.2 **IMMEDIATELY NOTIFY** the Issuing Authority.
- 4.3.3 **DO NOT** continue with the current task (e.g., reposition a component found in the incorrect position) until the Issuing Authority has resolved the issue.
- 4.4 The use of Human Danger Tags (i.e., a person protecting other personnel/equipment by component observation) SHALL NOT be performed.
- 4.5 An ECO MAY NOT be required if you are in direct physical control of the energy isolation device, such that someone would be unable to manipulate the isolation. Some examples:
- An Electrician opening a breaker, meggering the load side and then reclosing the breaker is not considered as a human tag.
 - A Mechanic rethreading the open end of a pipe just downstream of a closed isolation is not considered as a human tag.
- 4.6 IF a BOUNDARY exists, THEN plant conditions (e.g., Modes) or procedures (e.g., POP03's) SHOULD NOT be used to protect personnel or equipment.
- 4.6.1 IF plant conditions or procedures are used as a BOUNDARY, THEN a documented method (e.g., WAN or ECO number listed on an OAS as a mode restraint, POP03 procedure step, etc.) SHALL be in place to ensure work is completed prior to changing those plant conditions.
- 4.6.2 The documented method SHALL be listed as a note on the ECO to notify the work group of the special boundary requirement.
- 4.7 The use of multiple ECOs to provide protection for a single work activity is allowable. The WORK DOCUMENT is to be listed and accepted on each of the ECOs. Each ECO SHALL be listed on the WORK DOCUMENT.

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- 4.8 The required position as written on an ECO Tag may not always be a letter for letter match with the component labeling. The requirement is that the intent of the ECO Tag must be met. Examples of this are as follows:
- An ECO Tag with a position of “DO NOT DEPRESS” attached to a start pushbutton.
 - An ECO Tag with a position of “AUTO/CLOSE” attached to a handswitch that spring returns to a centered position. In this case, “AUTO/CLOSE” requires that the valve be CLOSED and then tagged in the centered position.
 - An ECO tag with a designation (e.g., CP-HS-5706D CSV D Condensate Inlet Valve Handswitch) attached to a handswitch labeled with the TPNS number of the component it operates and an abbreviated noun name (e.g., CP-FV-5706D CSV D Inlet Valve).
- 4.8.1 IF the identification or position listed on the ECO Tag does not agree with the component label, THEN stop and contact the ISSUING AUTHORITY for resolution.
- 4.9 Use of temporary restraining devices (e.g., Ty-Wraps, meter seals and breaker restraining devices) are acceptable for execution of ECOs provided the temporary restraining device is removed when the ECO is released.
- 4.10 IF an activity may cause the ECO to be lost, contaminated, or unreadable, THEN a copy MAY be used to perform the activity.
- 4.10.1 IF a copy is used, THEN all persons SHALL:
- 4.10.1.1 Identify and document actions performed on the official ECO Report.
 - 4.10.1.2 TRANSFER any additional information contained on the copy to the official ECO Report.
 - 4.10.1.3 DISCARD the copy when the activity is completed.
- 4.11 IF an ECO tag is found detached from the component listed on the tag, THEN the tag SHALL be delivered to the ISSUING AUTHORITY. The ISSUING AUTHORITY may rehang or issue a new ECO tag.
- 4.11.1 IF the ECO tag is rehung, THEN Operations personnel SHALL re-initial on the ECO (paper) for rehang and verification, as required. The ISSUING AUTHORITY SHALL place a note on the ECO (computer) with the following information:
- Who rehung the tag and date.
 - Who verified the tag (if applicable) and date.
 - ISSUING AUTHORITY name and date.

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- 4.12 IF a tag is found to be missing or deteriorated for an active ECO, THEN a replacement tag SHALL be issued as the next available line item for the ECO. (Reference 2.2.30).
- 4.13 WHEN an area has been designated as an Enclosed Space or Permit Entry Space per 0PGP03-ZI-0007, THEN the designated Entry Supervisor SHALL be responsible for all activities in the "Enclosed Space" or "Permit Entry Space".
- 4.14 Workers are required to sign on an ECO Worker Tracking Form (Form 6) when the ECO is utilized for personnel protection. ECOs for administrative purposes (i.e. radiological controls or Technical Specification compliance) are not required to use the ECO Worker Tracking Form.
- 4.15 ECOs that are manually written during computer outages will be assigned temporary tracking numbers. WHEN the applicable computer application becomes available, THEN the ECOs with temporary tracking numbers MAY be rewritten in the applicable computer database.
- 4.15.1 IF a computer generated ECO is hung and accepted by all signed on acceptors on the ECO with a temporary tracking number, THEN the ECO with the temporary tracking number MAY be released.
- 4.15.2 IF the ECO is not entered into the ECO database, THEN the ECO **SHALL** be transmitted manually in accordance with 0POP01-ZA-0015.
- 4.16 Forms 7 through 12 (ECO Performance Checklists) are provided as job aids for workers performing ECO tasks. These checklists provide abbreviated instructions and supplemental information. Use of these checklists does not constitute or imply permission to deviate from the detailed ECO performance instructions contained in the body of the procedure.
- ACCEPTORS SHOULD utilize Form 12 (ECO Acceptor Checklist) during each ECO acceptance.
 - Other personnel performing ECO activities SHOULD utilize the applicable checklist for the first performance of the activity for that day.

Equipment Clearance Order Instructions

5.0 Instructions

5.1 Danger Tags

- 5.1.1 The removal of a component with a DANGER TAG attached is a violation of the ECO program. The DANGER TAG **SHALL** be RELEASED prior to removing the component.
- 5.1.2 The position of a component identified on the DANGER TAG **SHALL NOT** be changed. The following are specific exceptions for illustration purposes. Not all possible scenarios are presented here: (Reference Step 2.2.27)
- When a valve is tagged closed, the valve MAY be repositioned in the closed direction ONLY as necessary to stop any seat leakage.
 - The positions of valves being INDEPENDENTLY VERIFIED MAY be repositioned in accordance with Conduct of Operations, Chapter 9 (Valve Operations) ONLY to check the actual position of the component being verified.
 - A breaker MAY be removed from or placed into a breaker cubicle for troubleshooting, testing or maintenance with a DANGER TAG hung on the breaker's door with a DANGER TAGGED position of RACKED OUT or OFF. Placing a breaker in the TEST, CONNECT or ON position is prohibited.
 - A grounding buggy/breaker can NOT energize the load side of a cubicle; therefore, installing a grounding buggy/breaker into a cubicle does NOT conflict with a DANGER TAG on the cubicle door requiring a breaker position of RACKED OUT.
- 5.1.3 A DANGER TAG MAY be hung on a valve with the position of backseated or mainseated to prevent packing leakage.
- 5.1.3.1 The Plant Manager or designee must approve this type of maintenance.
- 5.1.3.2 The DANGER TAG **SHALL** be RELEASED prior to the performance of maintenance.

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- 5.1.4 A DANGER TAG **SHALL** be hung on a BOUNDARY valve with the position of CLOSED to allow maintenance on the downstream side flange of the tagged valve.
- 5.1.4.1 The Plant Manager or designee must approve this type of maintenance.
- 5.1.5 A DANGER TAG **SHALL** be hung on a valve stem-gagging device with the position of gagging device INSTALLED to allow Maintenance to remove and replace the actuator.
- 5.1.5.1 Removing an actuator with a gagging device installed and tagged on a valve is NOT considered removing or working on a DANGER tagged component.
- 5.1.6 A DANGER TAG **SHALL NOT** be removed without the permission of the signed on ECO ACCEPTORS and the ISSUING AUTHORITY. The requirements to obtain this permission are detailed in this procedure.
- 5.1.7 A DANGER TAG and a TEST TAG **SHALL NOT** be issued for the same device.
- 5.1.8 A DANGER TAG **SHALL NOT** be used as an administrative lock in place of a mechanical locking device on a LOCKED COMPONENT to meet the control requirements of 0POP01-ZA-0001, Plant Operations Administrative Guidelines. (Reference Step 2.7.9)

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5.2 Test Tags

CAUTION

A TEST TAG DOES NOT provide the level of restraint and safety equivalent of a DANGER TAG.

- 5.2.1 A TEST TAG **SHALL** be treated by everyone as a DANGER TAG except the person or WORK GROUP to whom the tag was issued.
- 5.2.2 A TEST TAG **SHALL NOT** be used for configuration control.
- 5.2.3 A TEST TAG and a DANGER TAG **SHALL NOT** be issued for the same device.
- 5.2.4 A device **SHALL NOT** be assigned more than one TEST TAG.
- 5.2.5 The OPERATIONAL AUTHORITY is the owner of the TEST TAG whenever the ACCEPTOR is not signed on the ECO.
- 5.2.6 Each TEST TAG **SHALL** be tied to specific WORK DOCUMENT and WORK GROUP. This information **SHALL** be listed on the TEST TAG prior to the ISSUING AUTHORITY approval.
- 5.2.7 IF the reason for a TEST TAG should change (i.e. different WORK GROUP or WORK DOCUMENT), THEN the existing TEST TAG **SHALL** be RELEASED and a new TEST TAG **SHALL** be issued.
- 5.2.8 A REQUIRED POSITION of "Tag Hung" and "Tag Removed" should be used unless otherwise requested.

NOTE

IF the ECO job item associated with the WORK DOCUMENT listed on the TEST TAG is signed on, THEN the OPERATIONAL AUTHORITY **SHALL NOT** reposition components when hanging or removing TEST TAGS unless specifically requested by the ACCEPTOR (or designee).
(Reference Step 2.2.32)

- 5.2.9 IF a component covered by a TEST TAG requires operation, THEN the TEST TAG owner (ACCEPTOR OR designee) **SHALL** achieve operation of the component by one of the following methods:
- Request the OPERATIONAL AUTHORITY to perform the operation.
 - Obtain permission from the OPERATIONAL AUTHORITY to operate the TEST TAGGED component for a predetermined duration.
 - IF authorized by the OPERATIONAL AUTHORITY, THEN obtain permission from the ISSUING AUTHORITY to operate the TEST TAGGED component for a predetermined duration.

Equipment Clearance Order Instructions

5.3 Caution Tags

- 5.3.1 CAUTION TAGS **SHALL NOT** be used for personnel safety or equipment protection.
- 5.3.2 CAUTION TAGS used for providing operator information **SHOULD** list a **REQUIRED POSITION** of Tag Hung and/or Tag Removed.
- 5.3.3 CAUTION TAGS that list a **REQUIRED POSITION** other than Tag Hung or Tag Removed **SHALL** be **INDEPENDENTLY VERIFIED** unless the **INDEPENDENT VERIFICATIONS** are waived in accordance with the provisions of this procedure.
- 5.3.3.1 Components tagged with CAUTION TAGS listing **REQUIRED POSITIONS** **MAY** be manipulated with permission of the **ISSUING AUTHORITY**.
- 5.3.4 CAUTION TAGS **SHALL NOT** be used as a configuration control device without meeting one of the following criteria:
- 5.3.4.1 The component being placed in a controlled position is associated with a material deficiency (e.g., 1-MD-0238 is closed due to LV-7928 failing open) **AND** a Condition Report has been written to correct the deficiency.
- 5.3.4.2 The component is being placed in a controlled position to support preventative or corrective maintenance activities (0PGP03-ZA-0090).
- 5.3.4.3 The component being placed in a controlled position is included in the scope of a Plant Modification (0PGP04-ZE-0309) or Temporary Modification (0PGP03-ZO-0003).
- 5.3.4.4 A License Compliance Review Form (0PAP01-ZA-0103) is completed for the component's controlled position.

Equipment Clearance Order Instructions**5.4 ECO Tags and Attachment Devices**

5.4.1 The method of attachment for ECO tags **SHOULD** be:
(Reference Step 2.2.39, 2.7.12)

- of a non-reusable type
- be self-locking and non-releasable
- have a minimum breaking strength of no less than 50 pounds
- a device that must be physically destroyed to remove the tag (e.g., using self-locking Ty-wraps or 12-ply natural linen cord tied with a knot)

5.4.1.1 Red Ty-wraps are the preferred source for hanging ECO tags.

5.4.1.2 Where it is not feasible to use a self-locking device, other means of attachment **MAY** be used.

5.4.2 Tag and attachment devices **SHOULD** be evaluated for compatibility with the environment or locations where used: (Reference Step 2.2.47)

5.4.2.1 Paper tags **MAY** be used for applications that are protected from harsh environments or environmental elements (e.g., a DANGER TAG used to tag a 480 VAC molded case circuit breaker or control panel handswitches). (Reference Step 2.2.39)

5.4.2.2 Hard plastic tags **SHALL** be used in the Reactor Containment Building (RCB), chemically harsh environments and applications where the tag would be susceptible to being exposed to the environmental elements (i.e., rain, bright sunlight, etc.). (Reference Step 2.2.39)

5.4.2.3 The number of ECO tags hung in the RCB at any one time while the plant is in Modes 1 – 4 **SHALL** be limited to 100 (one hundred). (Reference Step 2.2.48)

5.4.2.4 Self-locking Ty-wraps **SHALL** not be used to attach tags inside the RCB unless specifically approved for that application.

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5.4.3 ECO tags SHALL be placed in the following manner:

5.4.3.1 Tags SHOULD be placed such that they do not interfere with or obscure indications, switches or controls.

NOTE

For situations where an electrical circuit breaker will be removed for maintenance, the tag SHOULD be placed on the cubicle door in a conspicuous position.

5.4.3.2 Tags SHALL be affixed directly to the energy isolation device.

- a. WHEN a tag cannot be attached directly to the energy isolation device, THEN the tag SHALL be placed as close as safely possible to the device.
- b. For 13.8KV and 4160V breakers the tag SHOULD be affixed to the racking mechanism.

5.4.4 IF an ECO tag is required to be moved from the original hang location to a new location on a device, THEN the following actions SHALL be taken:

5.4.4.1 The ISSUING AUTHORITY SHALL evaluate the proposed new hang location to ensure comparable control of the device is maintained.

5.4.4.2 The ISSUING AUTHORITY SHALL authorize tag movement by annotating the new tag hang location on the ECO (paper).

5.4.4.3 The ECO PERFORMERS SHALL re-initial on the ECO (paper) for rehang and verification, as required.

5.4.4.4 The ISSUING AUTHORITY SHALL place a note on the ECO (computer) with the following information:

- A description of the tag hang location change.
- Who rehung the tag and date.
- Who verified the tag (if applicable) and date.
- ISSUING AUTHORITY name and date.

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5.5 ECO Verification Requirements (Reference Steps 2.4.3, 2.4.5, 2.4.6, 2.4.7)

5.5.1 Independent verification is required for:

5.5.1.1 ALL ECO tagging activities unless otherwise designated (i.e., ground removal). (Reference Steps 2.4.5, 2.6.3)

- This includes components where a Caution Tag controls a component's position.

5.5.1.2 All components in the LOCKED COMPONENT program. This requirement SHALL NOT be waived.

- Locked components **SHALL** be positioned in accordance with Conduct of Operations (i.e., LIP throttle valves dual verified for position and then independently verified locked-in-place).

5.5.2 All grounding devices **SHALL** be DUAL VERIFIED following removal to prevent the return of electrical power distribution equipment to service with a GROUND installed.

5.5.2.1 This verification **SHALL** be performed by a member of the Operations Department. This requirement SHALL NOT be waived.

5.5.3 WHEN restoring a 480V LC BKR or above, direct or indirect independent verification **SHALL** be performed.

5.5.3.1 IF indirect INDEPENDENT VERIFICATION is performed (e.g., breaker continuity start of equipment), THEN a step **SHALL** be listed on the ECO to document performance.

5.5.4 IF SIGNIFICANT RADIATION EXPOSURE, PERSONNEL SAFETY REDUCTION or EMERGENCY conditions are met, THEN the ISSUING AUTHORITY MAY waive INDEPENDENT VERIFICATION. (Reference Steps 2.2.14, 2.2.28)

5.5.4.1 WHEN possible to observe remote indicators or component/system conditions, THEN USE an INDIRECT INDEPENDENT VERIFICATION to satisfy the requirements for INDEPENDENT VERIFICATION.

5.5.4.2 IF INDEPENDENT VERIFICATION is waived, THEN RECORD the reason for the waiver on the ECO.

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- 5.5.5 IF the ISSUING AUTHORITY waives the requirement for INDEPENDENT VERIFICATION during restoration of an ECO, THEN:
- 5.5.5.1 The Operations Department/Division Manager or designee must approve waiving INDEPENDENT VERIFICATION prior to restoration of an ECO for reasons other than those listed in Step 5.5.4 of this procedure.
- 5.5.5.2 For systems listed in 0PGP03-ZA-0010, an entry **SHALL** be made in the Operability Assessment System (OAS) to ensure that the respective system lineup, to include, as a minimum, the portions that were manipulated under the ECO for which INDEPENDENT VERIFICATION was waived, is completed prior to declaring the system operable or returning it to service.

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5.6 ECO File Control

5.6.1 ECO **SHALL** be controlled from one of the following two files:

File 1: ECO for Unit 1 and common power equipment under the jurisdiction of Unit 1 Operations. (Controlled by Unit 1 Operations Manager)

File 2: ECO for Unit 2 and common power equipment under the jurisdiction of Unit 2 Operations. (Controlled by Unit 2 Operations Manager)

5.6.2 The ECO **SHALL** be maintained in the ISSUING AUTHORITY's file for as long as the ECO remains active. Where paper reports are being used to perform ECO related activities, the following applies:

5.6.2.1 The original ECO **MAY** be removed from the ISSUING AUTHORITY'S file while it is being used to hang tags, remove tags or during tag ACCEPTANCE/VERIFICATION.

5.6.2.2 The original ECO **SHALL** be returned to the ISSUING AUTHORITY'S file as soon as possible upon completion of the above functions.

5.6.3 IF Facilities Management Personnel are NOT available to isolate (lockout or tagout) equipment under the jurisdiction of 0PGP03-ZO-ECO2, Facilities Management Equipment Lockout/Tagout Program, THEN the Unit 1 or Unit 2 Shift Supervisor has the authority to issue an ECO in File 1 or 2, respectively.

5.6.3.1 The Shift Supervisor issuing ECO into File 1 or 2 **SHALL** notify Facilities Management personnel as soon as possible.

5.6.3.2 Facilities Management **SHALL** isolate (either lockout or tagout) equipment that encompasses the ECO scope written for File 1 or 2.

5.6.3.3 WHEN the Facilities controlled equipment is isolated per 0PGP03-ZO-ECO2 , THEN the File 1 or File 2 ECO **SHALL** be released.

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5.7 Requesting an ECO

NOTE

An ECO Request/Feedback Form is not required if the ECO requirements are contained in a procedure or the activity is being directed or performed by the ISSUING AUTHORITY.

5.7.1 The ECO REQUESTER **SHALL**:

5.7.1.1 Provide detailed information on the work scope/condition.
(Reference Steps 2.2.12, 2.8.12).

- a. This may be provided in the STPEGS Work Management System (Tool Pouch work scope is in the Corrective Action Program).

NOTE

- IF an ECO Request/Feedback Form is integrated into the work package, THEN it may be used in lieu of Form 2.
- IF any special instructions or information are contained in the Work Package (i.e., this component affects operability), THEN it should be listed under special instructions on the ECO Request/Feedback Form.

5.7.1.2 Complete an ECO Request/Feedback Form (Form 2) to provide sufficient information or recommend isolation BOUNDARIES to provide for personnel safety.

- a. IF the ECO Request/Feedback Form does not provide information for **ALL** WORK GROUPS requiring protection under the WORK DOCUMENT, THEN a separate ECO Request/Feedback Form **SHALL** be submitted for each WORK GROUP. (Reference Step 2.2.12)

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- b. The following can be used to provide sufficient information for generating the ECO:
- Identify the Required Maintenance State (i.e. deenergized, drained, depressurized, etc.)
 - Identify the specific component and it's position
 - Reference drawings
 - Specific instructions (e.g., This component affects Operability, troubleshoot first then hang tags)
 - Request multiple ECOs for a single work order and boundaries for each
 - Point of Contact for questions

NOTE

- Any change to an ECO after completion of the Technical Review SHALL be performed using Section 5.13, Revising an ECO.
- An ECO Request/Feedback Form is not required if the ECO requirements are contained in a procedure or the activity is being directed or performed by the ISSUING AUTHORITY.

- 5.7.2 IF a change to a requested ECO is identified, THEN the REQUESTOR SHALL communicate the changes to the ISSUING AUTHORITY by submitting a new ECO Request/Feedback Form.

Equipment Clearance Order Instructions

5.8 Preparing an ECO

CAUTION

WHEN a component is removed from service for maintenance AND tagged per this procedure AND ACCEPTED by the WORK GROUP, THEN the equipment **SHALL** remain tagged until maintenance is complete AND released by the Work Group. An ECO with ACCEPTORS MAY be revised to RELEASE tags as allowed by this procedure to perform testing activities.

NOTE

- A fundamental concept of the ECO program is that for the purposes of personnel or equipment safety, two members of the station staff (as defined by PREPARER and TECHNICAL REVIEWER) **SHALL** agree to the preparation and review of the ECO based on work scope. The person preparing the ECO or revision and the person who performs the Technical Review **SHALL** be separate individuals.
- Addendums 2 through 5 provide guidance on mechanical isolation, backseating/mainseating, electrical isolation, and grounding high voltage electrical power distribution equipment.
- Refer to Section 5.4 when preparing ECO tags and attachment devices.
- The process of Preparing – Hanging an ECO is outlined in Addendum 1, ECO Process Flow Charts.

5.8.1 DETERMINE the scope of the ECO

5.8.1.1 **REVIEW** the WORK DOCUMENT AND the submitted ECO preparation information. (e.g., CRWO, PM, ST or CAP)

5.8.1.2 Contact the cognizant activity Supervisor for supplemental information as required to prepare the ECO.

5.8.1.3 **ENSURE** the ECO provides adequate personnel and equipment protection.

5.8.1.4 As a minimum, tag all HAZARDOUS SOURCES OF ENERGY necessary to protect the safety of personnel and equipment.

5.8.1.5 The tagging of handswitches alone **SHOULD NOT** be used to protect the safety of personnel or equipment from HAZARDOUS SOURCES OF ENERGY. IF available, THEN an energy isolation device (i.e., circuit breaker, relay disconnect, etc.) **SHALL** be used to protect personnel or equipment. (Reference Step 2.2.42)

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- 5.8.1.6 Clearances **SHALL** be prepared in such a manner as to prevent the inadvertent operation of tagged components (e.g., Motor Operated Valves **SHALL** have associated power supplies and handwheels tagged).

NOTE

- Systems outside configuration control are delineated in 0PGP03-ZA-0109, Configuration Management Program.
- Non-controlled databases (e.g., Distribution Panel Load Lists) are NOT considered an appropriate reference source.
- Information provided in approved work packages or by the cognizant activity supervisor **SHALL** not be used as the sole source for clearance preparation. (Ref. 2.2.52)

- 5.8.1.7 Clearances **SHALL** be prepared using one or more of the following appropriate reference sources:

- Level 1 Controlled Documents—preferably P&IDs, electrical single line drawings, and elementary diagrams.
- For systems or equipment outside of configuration control, drawings or sketches provided by the Contract Technical Coordinator (CTC) or System Engineer which accurately reflect the “as-built” condition.
- Drawings or sketches contained in approved plant procedures.
- A field walkdown of the equipment or system to be tagged out.
- Information provided by approved work packages.
- Information provided by the cognizant activity supervisor (e.g., ECO Request/Feedback Form, etc...).

- 5.8.1.8 IF a field walkdown is required for ECO preparation, THEN a note should be annotated on the ECO stating that the field configuration may not match the system drawing and that a field walkdown was required.

- 5.8.1.9 IF the ECO will be prepared using drawings or sketches of a system outside of configuration control, THEN a note should be annotated on the ECO stating that the CTC or System Engineer ensures adequacy of these drawings.

Equipment Clearance Order Instructions

5.8.2 Preparing an ECO using the ORACLE ECO Database

- 5.8.2.1 ENSURE that **YOU** are logged into ORACLE by verifying the correct user ID at the top of the computer form.

NOTE

The following items are to be performed on the **MAIN FORM-FRONT PAGE**.

5.8.2.2 Complete the ECO Detail tab:

- a. List the associated TAGTPNS by:

1. Type in the TAGTPNS

OR

2. Entering the following to bring in the TAGTPNS from the MED database,

- A. RECORD the principal System involved.
 B. RECORD the component Ops Device type.
 C. RECORD the component Ops Device number.



- IF the LOV button is clicked in the Number block, THEN it will list all the components in that system or narrow it down if the Device type was included.

- b. RECORD the Work Description for which this ECO is being created.

1. A Work Authorization Number (WAN) or CR number can be entered and the respective job description will automatically populate the work description field.



- The LOV for WAN's will list all WAN's for Units 1, 2 & 0 from today's date back two weeks and a look ahead for the next six weeks.



- The LOV for CR's will list all open CR's for Units 1, 2 & 0.

Equipment Clearance Order Instructions

- c. RECORD the reason for the ECO. (e.g., Outages, LCO Work Weeks) (LOV)



List Of Values

- d. LIST any applicable notes that pertain to the ECO. (LOV)

NOTE

The ECO Computer Databases will automatically assign ECO Numbers. Manually assign ECO numbers only when NOT using the computer based ECO applications.

- e. SAVE data.



Save

NOTE

- The following items are to be performed on the **MAIN FORM-JOB ITEMS PAGE**.
- A procedure number SHOULD be used in lieu of a WAN if the job is to be performed per a procedure.

5.8.2.3

COMPLETE the Job Items Tab:

- a. **RECORD** the associated Work Description for each WAN, CR or procedure number.

- Hitting the tab key if there is a WAN, CR or Procedure number entered will automatically put its respective work description in this block.
- The LOV for WAN's will list all WAN's for Units 1, 2 & 0 from today's date back two weeks and a look ahead for the next six weeks.
- The LOV for CR's will list all open CR's for Units 1, 2 & 0.



List Of Values

NOTE

You must use the LOV icon for the Craft/Crew Code

- b. **RECORD** the associated Work Group(s) (and associated Crew Codes, if known).

- c. SAVE data.



Save

Equipment Clearance Order Instructions

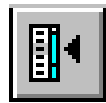
NOTE

The following items are to be performed on the **MAIN FORM-LINE ITEMS PAGE**.

5.8.2.4 **COMPLETE** the Line Items Tab:NOTE

IF there is no sequence listed, THEN perform the ECO in the order written.

- a. RECORD each component manipulation as a line item on the ECO and include the clearance position, if applicable. (Reference Step 2.2.9)
- b. (optional) RECORD the Execution Sequence in which the component is to be manipulated.
- c. RECORD the type of tag to be hung, if applicable. For those items that are listed and not tagged, no letter will appear.



List Of Values

- D - Danger Tag
- C - Caution Tag
- T - Test Tag

- d. IF this is a BOUNDARY component, THEN RECORD the letter "B" in the "BDRY" column.

1. A BOUNDARY can only exist with a Danger Tag.

NOTE

- IF a TAGTPNS does not exist for a component, THEN enter the applicable component information in the TAG NOTES field.
- The component (load) TAGTPNS SHALL be used to tag out the component power supply.

- e. RECORD the component TAGTPNS, if applicable, using the Unit, System, Ops Device Type and Ops Device Number fields.

Equipment Clearance Order Instructions

NOTE

For some ECOs, additional actions are required to prepare the equipment for tagging and restoration. (e.g., removal of a steam generator feed pump or security inverter from service require sections of a POP02 procedure to be performed.)

- f. RECORD the tagging instructions in the "TAG NOTES" block.
- g. RECORD supplemental actions or procedure(s) used (and, if necessary, the applicable section(s) performed) as a separate line item on the ECO. This includes "ECO Notes" that come into the ECO with a TAGTPNS number, where special attention is needed or where controlling the position of a component requires more detail. (Reference Steps 2.2.9, 2.2.51)
- h. IF the tag is a Caution Tag, THEN RECORD the information to be listed on the tag in the "CAUTION TAG NOTES" field.

NOTE

- A hand control switch position (e. g., OPEN, CLOSE) **SHALL** NOT be used as a "REQUIRED" position on an ECO unless the switch can maintain that position. *Refer to Step 4.8 for other details regarding handswitch positions.* (Reference Step 2.2.10)
- IF available, THEN an energy isolation device (i.e., circuit breaker, etc.) **SHALL** be used to protect personnel or equipment.
- Caution Tags used to provide information do not require an actual "REQUIRED" position be listed. A REQUIRED POSITION of TAG HUNG or TAG REMOVED SHOULD be used. Refer to Section 5.4.4 for verification requirements.

- i. RECORD the "REQUIRED" position of the component.
 - 1. The following electrical positions apply to Motor Control Center (MCC) breakers, lighting and distribution panel breakers and carriage type control power, closing and tripping power fuses:
 - OFF implies the state in which electrical current flow is not allowed. This applies to any two position electrical device.

Equipment Clearance Order Instructions

- ON implies the state in which electrical current flow is allowed.
2. The following electrical positions apply to relay rack disconnect fuses:
- REMOVED implies the state in which electrical current flow is not allowed. This applies to any two position electrical device.
 - INSTALLED implies the state in which electrical current flow is allowed.
3. The following electrical positions apply to load center and switchgear breakers:
- RACKED OUT OR DISCONNECT implies the state in which electrical current flow is not possible.
 - PTL (PULL TO LOCK) implies the associated breaker remote operating switch position.
 - RACKED IN OR CONNECT implies the state in which electrical current flow is allowed.
4. The following mechanical positions apply to valves and similar mechanical devices:
- OPEN: To change the physical position of a mechanical device to permit fluid flow.
 - CLOSED: To change the physical position of a mechanical device to prevent fluid flow.
 - THROTTLED: To position a valve in an intermediate position.
 - LOCKED OPEN/CLOSED: To fasten or secure open or closed.
 - LOCKED IN PLACE (LIP): To fasten or secure in a throttled position.
- j. IF the tag is a Test Tag, THEN RECORD the information to be listed on the tag in the “TEST TAG INFO” fields. The LOV must be used.

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- k. RECORD the document information in the “DOCUMENT INFO” fields. The LOV must be used.
- l. PREPARE the specified tag for each item(s) to be tagged:
- TAG designator (e.g., D-1)
 - TAGTPNS (if applicable) and Service Description
 - Caution Tag Notes (if applicable)
 - Test Tag Information (if applicable)
 - Component Position
- m. Record a note on the ECO if any special references (i.e., CTC drawings, etc.) were used for preparation.
- n. REVIEW the ECO for any special requirements (e.g., no vent or drain available, double valve protection not feasible when required, hazardous systems, check valves, relief valves, fail open or fail indeterminate valves used as boundaries.)
- IF any special requirements exist, THEN record a note on the ECO to alert ACCEPTORS of the hazard.
- o. REVIEW the ECO for the use of check valves, relief valves, fail open or fail indeterminate valves used a BOUNDARIES.
- IF any of these exist, THEN record a note on the ECO that the applicable Operations Department/Division Manager approval will be required.
- p. REVIEW the ECO for the use of backseated/mainseated valves, or work on adjacent flanges.
- IF any of the exist, THEN record a note on the ECO that the Plant Manager's approval is required.
- q. REVIEW the ECO for any impact on Fire Protection, Security, Chemistry or other group that should be given notification of the ECO to be hung.
- IF an ECO involves equipment under the operational control of a different department or their assistance is required, THEN RECORD a note on the ECO.
 - IF an ECO involves a Fire Service System interruption, THEN check the applicable block on Page 1 that

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notification to the On-Duty Fire Protection Coordinator will be required.

- IF Plant Outside Lighting, Emergency Lighting Diesel Generator, or Security Communications are affected by an ECO, THEN check the applicable block on Page 1 that notification to the Security Force Supervisor will be required.

r. WHEN the requirements of this section are complete, AND the PREPARER has performed the initial review of the ECO, THEN the PREPARER **SHALL**:



1. **CLICK** in the "PREPARED BY" block on the front page of the ECO form.
2. **SAVE** data.
3. **INFORM** the TECHNICAL REVIEWER the ECO is ready for review.

NOTE

Blank spaces on ECO's are NOT required to be completed or may be denoted with "N/A".

5.8.3 Preparing an ECO manually (NOT in ORACLE)

5.8.3.1 The ISSUING AUTHORITY **SHALL** IDENTIFY the next sequential ECO number and RECORD in the File 1 or File 2 Temporary ECO log (Form 1).

- a. The ECO number is the unit designator, followed by the last two digits of the current year and then followed by a four-digit number.

5.8.3.2 The PREPARER **SHALL** complete or ensure the following blocks are completed on the ECO:

NOTE

The following steps are to be completed on page 1 of the manual ECO form (Form 3).

- a. **RECORD** the Temporary ECO number on the ECO.
- b. Circle the applicable Unit.

Equipment Clearance Order Instructions

- c. IDENTIFY the component being tagged by the approved noun name in the “WHAT IS BEING TAGGED?” block.
 - IF a TAGTPNS exists, THEN RECORD it in the TPNS # block.
- d. RECORD the reason for the ECO in the “WORK DESCRIPTION” block.
- e. LIST any applicable notes that pertain to the ECO.

NOTE

The following steps are to be completed on page 2 of the manual ECO.

- f. RECORD any Work Documents and the WORK GROUP associated with each in the Job Items section of the ECO.

NOTE

The following steps are to be completed on page 3 of the manual ECO.

- g. RECORD the item/tag numbers in the "LINE NUMBER" block. No two line numbers SHALL be the same on the same ECO.
- h. RECORD the type of tag to be hung. For those items that are listed and not tagged, no letter is required.
 - **D** - **D**anger Tag
 - **C** - **C**aution Tag
 - **T** - **T**est Tag

NOTE

A minimum number of vents and/or drains to maintain a system or component drained or depressurized SHALL be designated as BOUNDARIES.

- i. IF this is a BOUNDARY component, THEN RECORD the letter "B" in the "BOUNDARY" column.
 - 1. A BOUNDARY can only exist with a Danger Tag.

Equipment Clearance Order Instructions

NOTE

- IF a TAGTPNS does not exist for a component, THEN enter the applicable component information in the COMPONENT ID OR INSTRUCTIONS field.
- For some ECOs, additional actions are required to prepare the equipment for tagging and restoration. (e.g., removal of a steam generator feed pump or security inverter from service require sections of a POP02 to be performed.)

- j. In the “COMPONENT ID OR INSTRUCTIONS” field, RECORD the following (if applicable):
1. Component TAGTPNS and Service Description. (Reference 2.2.9)
 2. Tagging instructions. (Reference 2.2.9)
 3. Test Tag Information
 4. Caution Tag Information
- k. INDICATE whether Independent Verification is required.
- l. RECORD the “ACTION” to be performed
- For tagged items - Hang or Release
 - For non-tagged items – Perform or Restore
- m. RECORD the “EXECUTION SEQUENCE”, if applicable.

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NOTE

- A hand control switch position (e. g., OPEN, CLOSE) **SHALL NOT** be used as a "REQUIRED" position on an ECO unless the switch can maintain that position. *Refer to Step 4.8 for other details regarding handswitch positions.* (Reference 2.2.10)
- IF available, THEN an energy isolation device (i.e., circuit breaker, etc.) **SHALL** be used to protect personnel or equipment.
- Caution Tags used to provide information do not require an actual "REQUIRED" position be listed. A REQUIRED POSITION of TAG HUNG or TAG REMOVED SHOULD be used. Refer to Section 5.4.4 for verification requirements.

- n. RECORD the "REQUIRED" position of the component.
1. The following electrical positions apply to Motor Control Center (MCC) breakers, lighting and distribution panel breakers and carriage type control power, closing and tripping power fuses:
 - OFF implies the state in which electrical current flow is not allowed. This applies to any two position electrical device.
 - ON implies the state in which electrical current flow is allowed.
 2. The following electrical positions apply to relay rack disconnect fuses:
 - REMOVED implies the state in which electrical current flow is not allowed.
 - INSTALLED implies the state in which electrical current flow is allowed.
 3. The following electrical positions apply to load center and switchgear breakers:
 - RACKED OUT OR DISCONNECT implies the state in which electrical current is not possible.
 - PTL (PULL TO LOCK) implies the associated breaker remote operating switch position.
 - RACKED IN OR CONNECT implies the state in which electrical current flow is allowed.

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4. The following mechanical positions apply to valves and similar mechanical devices:
- OPEN: To change the physical position of a mechanical device to permit fluid flow.
 - CLOSED: To change the physical position of a mechanical device to prevent fluid flow.
 - THROTTLED: To position a valve in an intermediate position.
 - LOCKED OPEN/CLOSED: To fasten or secure open or closed.
 - LOCKED IN PLACE (LIP): To fasten or secure in a throttled position.

NOTE

Refer to Section 5.4 for tag and attachment device requirements.

5.8.3.3 PREPARE the specified tag for each item(s) to be tagged:

- TAG Designator (e.g., D-1)
- TAGTPNS (if applicable) and Service Description
- Caution Tag Notes (if applicable)
- Test Tag Information (if applicable)
- Component Position

5.8.3.4 REVIEW the ECO for any special requirements (e.g., no vent or drain available, double valve protection not feasible when required, hazardous systems, check valves, relief valves, fail open or fail indeterminate valves used as boundaries.)

- a. IF any special requirements exist, THEN record a note on the ECO to alert ACCEPTORS of the hazard.

5.8.3.5 REVIEW the ECO for the use of check valves, relief valves, fail open or fail indeterminate valves used a BOUNDARIES.

- a. IF any of these exist, THEN record a note on the ECO that the applicable Operations Department/Division Manager approval will be required.

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- 5.8.3.6 REVIEW the ECO for the use of backseated/mainseated valves, or work on adjacent flanges.
- a. IF any of the exist, THEN record a note on the ECO that the Plant Manager's approval is required.
- 5.8.3.7 REVIEW the ECO for any impact on Fire Protection, Security, Chemistry or other group that should be given notification of the ECO to be hung.
- a. IF an ECO involves equipment under the operational control of a different department or their assistance is required, THEN RECORD a note on the ECO.
- b. IF an ECO involves a Fire Service System interruption, THEN check the applicable block on Page 1 that notification to the On-Duty Fire Protection Coordinator will be required.
- c. IF Plant Outside Lighting, Emergency Lighting Diesel Generator, or Security Communications are affected by an ECO, THEN check the applicable block on Page 1 that notification to the Security Force Supervisor will be required.
- 5.8.3.8 WHEN the requirements of this section are complete, AND the PREPARER has performed the initial review of the ECO, THEN the PREPARER **SHALL**:
- a. SIGN the "PREPARED BY" block and
- b. FORWARD the ECO to the TECHNICAL REVIEWER.

Equipment Clearance Order Instructions

5.9 Technical Review of an ECO

NOTE

IF the ISSUING AUTHORITY is reviewing the ECO and signing for Approval, THEN the Technical Reviewer block can be signed at the same time.

- 5.9.1 The TECHNICAL REVIEWER **SHALL** perform the following:
(References 2.2.1, 2.2.4, 2.3.1, 2.3.2, 2.4.8, 2.5.1, 2.7.6)

NOTE

- Systems outside configuration control are delineated in 0PGP03-ZA-0109, Configuration Management Program.
- Non-controlled databases (e.g., Distribution Panel Load Lists) are NOT considered an appropriate reference source.
- Information provided in approved work packages or by the cognizant activity supervisor **SHALL** not be used as the sole source for review of the ECO. (Ref. 2.2.52)

- 5.9.1.1 **REVIEW** the ECO to ensure adequate personnel and equipment safety is provided by the ECO. This review **SHALL** be performed using one or more of the following appropriate reference sources:

- Level 1 Controlled Documents—preferably P&IDs, electrical single line drawings, and elementary diagrams.
- For systems or equipment outside of configuration control, drawings or sketches provided by the Contract Technical Coordinator (CTC) or System Engineer which accurately reflect the “as-built” condition.
- Drawings or sketches contained in approved plant procedures.
- A field walkdown of the equipment or system to be tagged out.
- Information provided by approved work packages.
- Information provided by the cognizant activity supervisor (e.g., ECO Request/Feedback Form, etc...).

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- 5.9.1.2 REVIEW the ECO for the use of check valves, relief valves, fail open or fail indeterminate valves used as BOUNDARIES.
- IF any of these exist, THEN ensure that the applicable Operations Department/Division Manager has approved this use.
- 5.9.1.3 REVIEW each ECO tag's information to verify it is properly completed.
- 5.9.1.4 IF a system or component can NOT be depressurized OR adequately drained prior to breaching the system, THEN the TECHNICAL REVIEWER **SHALL** DESIGNATE the system as hazardous AND perform the following:
(Reference Step 2.2.35, 2.7.8)
- a. NOTIFY the appropriate Maintenance Supervisor so the appropriate changes to the work package can be made prior to work start. (Reference Step 2.2.12)
 1. RECORD a comment on the ECO stating that the system or component can NOT be depressurized or drained.
 2. PROVIDE a verbal caution to the ACCEPTOR prior to ECO acceptance.
- 5.9.1.5 REVIEW the ECO for any impact on Fire Protection, Security, Chemistry or other group that should be given notification of the ECO to be hung.
- a. Notify the impacted group of the approximate time frame in which the ECO will be hung.
- 5.9.1.6 VERIFY the ECO sequence is correct.
- IF the ECO is NOT written in sequential order, THEN DETERMINE the appropriate sequence AND NOTE this by number in the "EXE SEQ" column.
- 5.9.1.7 WHEN the requirements of this section are complete, AND the TECHNICAL REVIEWER has performed the second review of the ECO, THEN the TECHNICAL REVIEWER **SHALL**:
- a. SIGN the "REVIEWED BY" block and
 - b. FORWARD the ECO to the ISSUING AUTHORITY.

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5.10 Authorizing an ECO

NOTE

Refer to Addendum 5, Grounding Power Distribution Equipment, for the addition/removal of ECO Tags for grounding devices.

- 5.10.1 WHEN the "REVIEWED BY" block is completed, THEN prior to completing the "APPROVED BY" block, the following **SHALL** be performed:
- 5.10.1.1 The ECO **SHALL** be reviewed for regulatory requirements (e.g., Technical Specifications, ODCM, etc.) by a Senior Reactor Operator at STPEGS.
 - a. An ECO **SHALL NOT** be authorized that will place any part of more than one safety related train in an inoperable status without specific approval from the Shift Supervisor. (Reference 2.4.1)
 - b. Prior to intentionally placing any safety system, sub-system, train, component, or device out of service, the Technical Specification Limiting Condition for Operation **SHALL** be reviewed. (Reference 2.4.1)
 - 5.10.1.2 The ECO **SHALL** be reviewed against current Temporary Modifications.
 - 5.10.1.3 IF the ECO reduces the cooling capability of the Spent Fuel Pool Cooling System, THEN the ISSUING AUTHORITY **SHALL** ensure all compensatory requirements of 0POP02-FC-0001 (Spent Fuel Pool Cooling) are met.
 - 5.10.1.4 The ISSUING AUTHORITY **SHALL** notify the SSPS System Engineer prior to authorizing any clearance on SSPS components. (Ref. 2.2.50)
 - 5.10.1.5 IF the ECO involves a Fire Service System interruption, THEN the On-Duty Fire Protection Coordinator **SHALL** be given notification prior to the interruption.
 - 5.10.1.6 IF Plant Outside Lighting, Emergency Lighting Diesel Generator, or Security Communications are affected by the ECO, THEN the Security Force Supervisor **SHALL** be given notification prior to the interruption. (Reference 2.2.25)

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- 5.10.1.7 IF the ECO will impact Chemistry or other group outside of Operations, THEN affected group **SHALL** be given notification prior to the interruption.
- 5.10.1.8 IF the system/component will be made inoperable by executing the ECO AND an OAS entry is required, THEN RECORD the OAS number on the ECO.

NOTE

The review does NOT require re-verification of all line items against controlled documents.

- 5.10.1.9 The ISSUING AUTHORITY **SHALL** perform a final administrative review of the ECO:
- Review that the ECO remains valid for plant conditions.
 - ENSURE the OAS number is on the ECO, if applicable.
 - Review that the number of ECO Tags matches the number of tag line items on the ECO.
- 5.10.1.10 AUTHORIZE issuance of the ECO by completing the block titled "APPROVED BY".

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5.11 Performing/Verifying an ECO

NOTE

- WHEN the first ECO tag for an ECO is hung, THEN an ECO becomes a quality document AND the retention requirements stated on the ECO apply.
- Refer to Section 5.4 for attachment guidance when hanging ECO Tags.
- WHEN Operations is performing an ECO involving components that are not controlled by Operations, THEN the associated OPERATIONAL AUTHORITY SHOULD accompany Operations for component manipulations.

5.11.1 The ISSUING AUTHORITY **SHALL** assign an Operator to perform the ECO.

5.11.2 The PERFORMER **SHALL** perform the following:

5.11.2.1 VERIFY that the "APPROVED BY" block has been completed.

5.11.2.2 ENSURE the ECO is an "Official" copy.

5.11.2.3 VERIFY that the information recorded on the ECO tag agrees with:

- The information on the ECO.
- The information on the component or equipment plant label (if component of equipment is labeled).
- The ECO Tag's TPNS number identically matches the component's TPNS number (if component or equipment label has a TPNS number).
- The ECO Tag's service description functionally matches the component's service description (if component or equipment is labeled)

5.11.2.4 IF during performance of the ECO, additional actions are determined to be required, THEN PERFORM the following:

- a. OBTAIN permission from ISSUING AUTHORITY to perform the additional action.
- b. DOCUMENT the additional action on the next available line(s) on the ECO.

Equipment Clearance Order Instructions**NOTE**

IF the ECO does NOT have an execution sequence, THEN the ECO **SHALL** be performed in the order written.

5.11.2.5 ALIGN each component or device by:

- a. Sequence specified.
- b. Position specified.

5.11.2.6 MONITOR the system or component for adequacy of drainage.

- a. IF drainage is NOT adequate, indicating excessive BOUNDARY valve leakage, THEN NOTIFY the ISSUING AUTHORITY.

CAUTION

Do NOT unscrew locking rings on handswitches to facilitate the hanging of tags.

5.11.2.7 ATTACH the correct tag to the component (using an attachment device per Section 5.4) in a location that is easily observed.

- IF necessary, THEN contact the ISSUING AUTHORITY when hanging a tag on a component that has no location from which to hang the tag (e.g., valves with removable reach rods, underground valves with no valve stem, etc.) to obtain a device from which to hang the tag or further direction.

5.11.2.8 DOCUMENT each item positioned in the "HUNG BY" block on the ECO.

5.11.2.9 To update Oracle, PERFORM the following:

- a. Verify that all applicable "Hung By" signature blocks on the ECO Official copy are completed.
- b. Query the ECO you are working on.
- c. Go to the Line Items page.

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- d. Update the “Status” field for the applicable line items that were hung by:
1. Type an “H” in the “Status” field for the applicable Line Items
 2. Click the Save button
 3. Enter your e-sign password
- OR
- e. Update the “Status” field by using the LOV by:
1. Select “Tag has been Hung” from the LOV in the “Status” field for the applicable Line Items
 2. Click the Save button
 3. Enter your e-sign password
- OR
- f. IF all (or remaining) Line Items were Hung, THEN
1. Click the "tag status" hot key at the top of the form.
 2. Click the "Hang" button (A screen will pop up that states that all valid line items are Hung).
 3. Type in your e-sign password.
- g. IF Verification is not required, THEN the computer should update the ECO Status to “Hung”.
1. Answer if the ECO is ready for the Work Group to walkdown or NOT.
 2. Go back to the first page of the Main Form and verify that the ECO status has changed to "Hung". (You may have to again query the ECO number to refresh the screen.)

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3. Go to the Job items page and verify that the "Ready for Work Group Acpt" blocks for all jobs are checked. You may have to refresh the screen by clicking enter query (F7) and then execute query (F8).

5.11.2.10 Arrange for any required Independent Verifications OR Return the ECO Official copy to the ISSUING AUTHORITY.

5.11.3 WHEN required to perform an Independent Verification, THEN the VERIFIER **SHALL:**

5.11.3.1 INDEPENDENTLY VERIFY that the ECO tag is hung properly.

5.11.3.2 INDEPENDENTLY VERIFY each component positioned by the ECO is in its proper position.

5.11.3.3 DOCUMENT in the "VERF'D BY" block to indicate that the component has been INDEPENDENTLY VERIFIED.

5.11.3.4 To update Oracle, PERFORM the following:

- a. Verify that all applicable "Verfd By" signature blocks on the ECO Official copy are filled in.
- b. Query the ECO you are working on.
- c. Go to the Line Items page.
- d. Update the "Verfd" field for the applicable line items that were verified by:
 1. Clicking the "Verfd" check box for the applicable Line Items
 2. Click the Save button
 3. Enter your e-sign password

OR

- e. IF all (or remaining) Line Items were Verified, THEN
 1. Click the "tag status" hot key
 2. Click the "Verified" button (A screen will pop up that states that all valid line items are Verified)
 3. Type in your e-sign password

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- f. The computer should update the ECO Status to "Hung".
1. Answer if the ECO is ready for the Work Group to walkdown or NOT.
 2. Go back to the first page of the Main Form and verify that the ECO status has changed to "Hung". (You may have to again query the ECO number to refresh the screen.)
 3. Go to the Job items page and verify that the "Ready for Work Group Acpt" blocks for all jobs are checked. You may have to refresh the screen by clicking enter query (F7) and then execute query (F8).

5.11.3.5 Return the ECO Official copy to ISSUING AUTHORITY.

5.11.4 The ISSUING AUTHORITY or designee SHALL review the ECO upon completion of performing and independently verifying all tags. This review is to verify:

5.11.4.1 The performance of the ECO is complete.

5.11.4.2 Required Independent Verifications are complete.

5.11.4.3 The equipment tagged out is in a zero energy state (where applicable)—deenergized, vented, drained, etc. . . .

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- 5.11.4.4 IF a system will not depressurize or stop draining, THEN return the ECO to the ISSUING AUTHORITY.
- a. The ISSUING AUTHORITY **SHALL**:
- Contact the cognizant supervisor.
 - Determine if the work can be performed safely with the existing conditions.
 - IF the work can be performed safely, THEN the ISSUING AUTHORITY **SHALL** document this by completing the "Ready for Work Group Acceptance" block.
 - IF the work can not be performed safely, THEN take appropriate actions to place the equipment in a safe state (e.g., tighten BOUNDARY valves, expand BOUNDARIES, etc. . .) or defer the activity.
- 5.11.4.5 The clearance is ready for craft review and walkdown.
- 5.11.4.6 The person performing this review **SHALL** identify and document the review in the "READY FOR WORK GROUP ACCEPTANCE" block.
- For computer generated ECO's the program should ask you if the ECO is "READY FOR WORK GROUP ACCEPTANCE".
 - For non-computer generated ECO's sign the "READY FOR WORK GROUP ACCEPTANCE" block on the ECO form.

Equipment Clearance Order Instructions

5.12 Accepting an ECO

CAUTION

To provide the protection afforded by the ECO Program, it is vitally important to have the WORK DOCUMENT listed and signed for on any ECO used to provide for safety. For activities being performed by outside vendors, this WORK DOCUMENT MAY be a purchase order or contract number.

NOTE

- The WORK DOCUMENT is the fundamental vehicle of work management at STPEGS.
- The process of ACCEPTING an ECO is outlined in Addendum 1, ECO Process Flow Charts.

5.12.1 All WORK DOCUMENTS which require the protection afforded by the ECO Program **SHALL** be included on the ECO.

5.12.1.1 IF completion of a job requires three WORK DOCUMENTS, THEN the WORK GROUP **SHALL** ACCEPT the ECO three times, once for each WORK DOCUMENT.

5.12.1.2 A single WORK DOCUMENT MAY require support from other than the lead WORK GROUP. In this case, each WORK GROUP requiring the protection of the ECO Program **SHALL** ACCEPT the ECO separately for that document.

- a. Support groups (e.g., Health Physics performing swipes on valve internals, Quality Control performing pump seal inspections, etc.) may sign as workers on the lead WORK GROUP's ECO Worker Tracking Form AFTER receiving permission and ECO briefing from the ACCEPTOR or designee.

5.12.1.3 A single WORK DOCUMENT MAY require several members of the same WORK GROUP to complete the job. There **SHOULD** only be one ACCEPTOR, per WORK GROUP, per WORK DOCUMENT on the ECO.

5.12.2 An ECO MAY be ACCEPTED for the WORK GROUP by anyone meeting the requirements of ACCEPTOR.

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- 5.12.3 The ACCEPTOR **SHALL** VERIFY the following for the job being performed:
- 5.12.3.1 The scope and BOUNDARIES of the ECO are adequate to protect personnel working on the job under his/her specified craft.
- a. Ensure that the ECO provides for adequate de-energization, draining and/or depressurizing to support the Work Document. (References 2.2.12, 2.2.35)
- 5.12.3.2 The REQUIRED POSITION for the required components for the specific job being tagged are correct on the ECO.

NOTE

- Required components are only those required to perform work safely. Every job may not require the walkdown of every BOUNDARY listed on the ECO.
- Field walkdowns may be performed prior to the ECO being “Ready for Work Group Acceptance”.

- 5.12.4 The ACCEPTOR or designee **SHALL** perform a field walkdown to determine that the required correct components have been positioned and tagged.
- 5.12.4.1 The ACCEPTOR **SHALL** obtain a paper copy of the ECO PRIOR to walkdown to aid in verifying BOUNDARIES and tags. IF the computer process is unavailable, THEN obtain a copy of the ECO from the ISSUING AUTHORITY. (Reference Step 2.2.43)
- 5.12.4.2 For Test Tagged components, only the Energy Source Isolation component (e.g., Breaker or isolation valve) **SHALL** be walked down. Test tagged handswitches do not require walkdown since they do not provide energy source isolation. Test tagged handswitches provide coordination between the OPERATIONAL AUTHORITY and the WORK GROUP that is listed on the tag.

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NOTE

- WHEN an ECO is being performed, the ISSUING AUTHORITY MAY designate and authorize certain work activities as being "Ready for Work Group Acceptance" prior to an ECO being completed in its entirety.
- Examples of this include designating Electrical Maintenance work activities to begin on the HHSI Pump 1(2)A 4160 VAC switchgear prior Mechanical Maintenance work activities that are awaiting completion of the draining of the pump and associated piping or designating Mechanical Maintenance work activities to begin on the Startup Feed Pump 14 (24) prior to the completion of the Main Feedwater ECO during an outage.

5.12.5 Prior to accepting an ECO, the ACCEPTOR **SHALL** verify that the "READY FOR WORK GROUP ACCEPTANCE" block has been completed.

NOTE

- The ACCEPTOR MAY ACCEPT an ECO upon report from a qualified ACCEPTOR in the same WORK GROUP who has performed the field walkdown of the ECO.
- The person who is actually performing the work activity should sign on the ECO as the ACCEPTOR. Only in rare situations should a Supervisor sign on the ECO for the worker (e.g., outage work requiring contractor support, CTC directing vendors, RCB at power ECO's, Operations for configuration control or Technical Specification compliance). It is acceptable that a Supervisor will sign on the ECO for jobs that do NOT have a work document assigned (e.g. Incore Detector storage at power, administrative ECO required).

5.12.6 WHEN the requirements of this section are complete, THEN the ACCEPTOR **SHALL** sign on the ECO job item by:

5.12.6.1 For COMPUTER GENERATED ECO's

- a. ENSURE that YOU are logged into Oracle.
- b. Query your ECO on the ECO Main Form.
- c. Find your Job/WAN on the Job Items page
- d. Click in the "Craft Sign On" block for each WORK DOCUMENT being accepted.
- e. Click the SAVE button and enter your e-sign password.

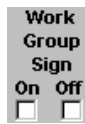
Equipment Clearance Order Instructions

5.12.6.2 For NON-COMPUTER GENERATED ECO's

- a. Sign onto the ECO by completing the " WORK GROUP SIGN ON " block on the ECO for each WORK DOCUMENT being accepted.

5.12.7 IF a job item is inadvertently accepted, THEN PERFORM the following:
(Reference 2.7.11)

5.12.7.1 For COMPUTER GENERATED ECO's



- IF data was NOT saved, THEN UNCHECK the "WORK GROUP SIGN ON" block for the wrong work activity.

OR



- IF data WAS saved, THEN click in the "WORK GROUP SIGN OFF" block and save data. NOTIFY the ISSUING AUTHORITY to add the WORK DOCUMENT to the next available line on the ECO. The ACCEPTOR or designee should now sign on for the WORK DOCUMENT.

5.12.7.2 For NON-COMPUTER GENERATED ECO's

- Do NOT delete the Acceptance signature by lining-through and dating.
- DOCUMENT the release of the WORK DOCUMENT instead.
- REQUEST the ISSUING AUTHORITY add the released WORK DOCUMENT to the next available blank line on the ECO.
- The ACCEPTOR or designee SHOULD now sign on for the WORK DOCUMENT.

5.12.8 The ACCEPTOR or designee **SHALL BRIEF ALL WORKERS** on the ECO BOUNDARIES, as a minimum.

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NOTE

- The purpose of the ECO Worker Tracking Form is to inform the ACCEPTOR or designee of all the personnel who are relying upon the ECO for protection. The WORKERS are NOT required to verify the ECO BOUNDARIES.
- WORKERS are only required to sign on the Worker Tracking Form once per job.
- Use either the computer form OR the paper form to list all WORKERS. Using both may lead to errors when signing off a job item.

5.12.9 The WORKER(S) **SHALL** sign on the ECO Worker Tracking Form (Form 6 or computer).

5.12.9.1 WORKER sign on signatures MAY be obtained per telecom, for unique and specific evolutions. (e.g., workers in a contaminated area)

5.12.9.2 IF the ACCEPTOR or designee is a WORKER for this job, THEN the ACCEPTOR **SHALL** also sign on as a worker.

5.12.9.3 To sign on the Worker Tracking (Form 6),

a. Fill in information for the following fields:

- Department or company
- Badge No.
- Signature (if for someone else, sign your name and add comment)
- Sign ON date/time.

5.12.10 The ACCEPTOR or designee **SHALL ENSURE** that **ALL WORKERS** are signed on the ECO Worker Tracking Form (Form 6 or computer).

5.12.11 Each subsequent shift, before starting work on a job covered by an ECO, each ACCEPTOR or designee **SHALL VERIFY** that the ECO still provides coverage for the job.

5.12.11.1 IF the ECO has revised since the last BOUNDARY verification and the revision affects the job item, THEN OBTAIN a paper copy of the ECO and PERFORM a field walkdown of the ECO BOUNDARIES to ensure the ECO still provides coverage for the job, OTHERWISE a field walkdown is not required.

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- 5.12.11.2 The ACCEPTOR or designee **SHALL** sign stating that the BOUNDARIES are intact prior to starting the work activity. This can be performed on the ECO BOUNDARY Verification Datasheet (Form 5 or computer).
- 5.12.11.3 The ACCEPTOR or designee **SHALL** brief **ALL** active workers on the ECO BOUNDARIES, as a minimum.

NOTE

The purpose of the ECO Worker Tracking Form is to inform the ACCEPTOR or designee of all the personnel who are relying upon the ECO. The workers are NOT required to verify the ECO BOUNDARIES.

- 5.12.11.4 The WORKER(S) **SHALL ENSURE** they are signed on the ECO Worker Tracking Form (Form 6 or computer).
- a. IF the ACCEPTOR or designee is also a WORKER for the job item, THEN they **SHALL** also sign on ECO Worker Tracking Form.
- 5.12.11.5 The ACCEPTOR or designee **SHALL ENSURE** that **ALL** active WORKERS are signed on ECO Worker Tracking Form (Form 6 or computer).
- 5.12.12 WHEN a component has been removed from service by an ECO, THEN component manipulations are NOT allowed without the permission of the OPERATIONAL AUTHORITY. It is the option to grant this permission for a duration as directed by the OPERATIONAL AUTHORITY.

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5.13 Revising an ECO (Reference 2.2.6)

NOTE

- The process of revising an ECO is outlined in Addendum 1, ECO Process Flowcharts.
- Any changes to an ECO, following the completion of the "REVIEWED BY" block, are to be considered a Revision. The requirements of this section **SHALL** be adhered to. (Reference Step 2.2.37)
- An ECO Request/Feedback Form is not required if the ECO requirements are contained in a procedure or the activity is being directed or performed by the ISSUING AUTHORITY.
- An ECO revision per this section is not required to change the location of a tag on a device. (such as moving the tag on a breaker from the breaker or racking device to the cubical door) Refer to Step 5.4.4.

5.13.1 IF an ECO Revision is desired, THEN the Requester will communicate to the ISSUING AUTHORITY the need for the ECO revision and its associated details by submitting a completed ECO Request/Feedback Form (Form 2).

5.13.2 Adding Work Documents

5.13.2.1 Additional WORK DOCUMENTS MAY be added to an ECO at any time. IF added after completion of the "REVIEWED BY" block, THEN PERFORM the following:

- a. The PREPARER adding a WORK DOCUMENT to an ECO **SHALL** document in the block titled "JOB ADDN RVW" that an initial review of this change has been performed to ensure the ECO provides personnel/equipment protection.
- b. The SRO approving the WORK DOCUMENT addition **SHALL** also document in the block titled "JOB ADDN SRO" that a second review of this change has been performed to ensure the ECO provides personnel/equipment protection.

Equipment Clearance Order Instructions**NOTE**

Refer to Addendum 5, Grounding Power Distribution Equipment, for the addition/removal of ECO Tags for grounding devices.

5.13.3 Changes to a Tagged or Untagged Component or Device

- 5.13.3.1 **WHEN** adding components to the ECO, **THEN** the **ISSUING AUTHORITY SHALL VERIFY** that configuration changes will **NOT** adversely impact ongoing work.
- a. The review requirements of Section 5.9.1 **SHALL** be performed prior to approving the addition of components to an ECO.

CAUTION

A Temporary Supervisor **MAY** perform the functions of a Supervisor under the directions of this procedure **ONLY** while actively filling the Supervisory position. Having been a Temporary Supervisor in the past **DOES NOT** meet the intent of this procedure with regards to allowing Supervisors to release ECO Tags.

- 5.13.3.2 **IF** the original **ACCEPTOR** for a work activity is onsite, **THEN** the original **ACCEPTOR** **SHOULD** release an ECO **DANGER/TEST** Tag. Only in rare situations should a Work Group Supervisor sign to release the ECO Tag (e.g., dressed out in Radiological Controlled Area (RCA), etc.).
- a. Any Supervisor releasing an ECO **DANGER/TEST** Tag for a work activity where the Supervisor is not the original **ACCEPTOR**, **SHALL verbally** notify the original work activity **ACCEPTOR** or designee prior to releasing the ECO Tag, unless the **ACCEPTOR** or designee is offsite.

5.13.3.3 Adding or Removing Caution Tags

- a. A **CAUTION TAG** may be used for configuration control provided the requirements of Step 5.3.4 are met.
- b. **CAUTION TAGS** that list a **REQUIRED POSITION** **SHALL** be **INDEPENDENTLY VERIFIED** unless waived per Section 5.4.4.

Equipment Clearance Order Instructions

5.13.3.4 Adding or Removing Test Tags

- a. The TEST TAG owner, as stated on the tag, **SHALL** approve the revision to add or release a test tag.
- b. WHEN the Owner of a TEST TAG has released the ECO for the WORK DOCUMENT that was controlling the Test Tag, THEN the ISSUING AUTHORITY MAY release the Test Tag at their discretion.

NOTE

WHEN performing a revision to partially release an ECO (i.e. an uncoupled motor run), THEN proper human performance techniques (e.g. peer checking) should be utilized to ensure that remaining BOUNDARIES provide adequate protection for ongoing and/or recommencing work prior to restarting the actual work. (Reference Step 2.2.43)

5.13.3.5 Adding or Removing Danger Tags:

- a. It **SHALL** be **mandatory** that an ACCEPTOR or designee approving the release of Danger Tags for a revision to an ECO fully understands that this approval means:
 1. The devices listed on the ECO may be repositioned by the OPERATIONAL AUTHORITY.
 2. Operation of the listed components will have NO adverse effect on the safety of any remaining work currently being performed under the work document. (Reference Step 2.2.42)
- b. IF an ECO BOUNDARY is reduced due to an ECO Revision, THEN the ISSUING AUTHORITY **SHALL** ENSURE (e.g., print verification, walkdown) that all valves between the original ECO BOUNDARY and the revised ECO BOUNDARY are placed in their restoration position to maintain configuration control of valves impacted. (Reference Steps 2.2.29, 2.2.37).

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5.13.4 Preparing a Revision

5.13.4.1 **REVIEW** the WORK DOCUMENT AND the ECO Request/Feedback Form (if submitted).

- CRWO, PM, ST or CAP (If a Condition Report)
- Contact the cognizant activity supervisor for supplemental information as required to prepare the revision.

5.13.4.2 **DETERMINE** the scope of the revision.

- a. **ENSURE** the revision still provides adequate personnel and equipment safety.

5.13.4.3 Components restored to a position other than one contained in an approved procedural lineup **SHALL** be re-listed as untagged line items to ensure the component is returned to its **REQUIRED POSITION** upon **RELEASE** of the ECO. (Reference Step 2.2.38)

5.13.4.4 IF preparing the revision in Oracle, THEN perform the following:

- a. **ENSURE** that **YOU** are logged into ORACLE by verifying the correct user ID at the top of the computer form.
- b. Query the ECO number on the ECO page and go to the Revision Form.
- c. Complete the Revision Form:
 1. Click on the “NEW REV” button.
 2. **STATE** the reason for the revision in the “REASON” field.
 3. Use the LOV to **LIST** each affected Job Item. (**The LOV MUST be used**).



List Of Values

NOTE

IF hanging or performing new line items, THEN the new line items need to be added to the ECO Main Form (Section 5.8.2) and then brought into the revision to Hang or Perform.



List Of Values

4. Use the LOV and **LIST** the line items required. (**The LOV MUST be used**).

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5. RECORD the Execution Sequence in which the component is to be manipulated. (optional).
- A. IF there is no sequence listed, THEN perform the ECO in the order written.

NOTE

IF restoring a system by performing a procedure, THEN use an action of RESTORE instead of PERFORM. This helps the database understand actions required when releasing the entire ECO.

6. ENTER the required Action
- HANG a tag or PERFORM an action (i.e., procedure step or position a component) – requires a clearance position.
 - RELEASE a tag or RESTORE a component – requires a restoration position.
- d. Record the required “CLEARANCE” or “RESTORATION” position
1. Caution Tags used to provide information do not require an actual "REQUIRED" position be listed. A REQUIRED POSITION of TAG HUNG or TAG REMOVED SHOULD be used.
- e. WHEN the requirements of this section are complete, AND the PREPARER has performed the initial review of the revision, THEN the PREPARER **SHALL**:
1. CLICK in the “PREPARED BY” block on the Revision form.
 2. SAVE DATA.
 3. INFORM the Technical Reviewer the revision is ready for review.

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- 5.13.4.5 IF preparing the Revision manually (NOT in ORACLE), THEN the PREPARER **SHALL** prepare the revision per the requirements of section 5.4 to include:

NOTE

The following steps are to be completed on page 1 of the manual ECO Revision Form (Form 4).

- a. RECORD the Temporary ECO number from the ECO on the ECO Revision Form.
- b. IDENTIFY the next sequential ECO revision number to be used.
- c. RECORD the revision number and reason for the revision.

NOTE

The following steps are to be completed on page 2 of the manual ECO Revision Form (Form 4).

- d. RECORD each affected WORK DOCUMENT and the WORK GROUP associated on the Job Items section of the revision form.
 1. IF releasing a Danger tag, THEN ALL Signed On Job Items **SHALL** be listed for Revision Approval.

NOTE

- Line items numbers on the revision form should coincide with the line item numbers on the ECO main form. IF additional line items are being HUNG or PERFORMED, THEN they are not required to put on the main form, if the revision is being created manually.
- The following steps are to be completed on page 3 of the manual ECO Revision Form (Form 4).

- e. RECORD Line Item information per requirements of Step 5.8.3

Equipment Clearance Order Instructions

- f. WHEN the requirements of this section are complete, AND the PREPARER has performed the initial review of the ECO, THEN the PREPARER **SHALL**:

1. SIGN the “PREPARED BY” block on Page 1 and
2. FORWARD the revision to the TECHNICAL REVIEWER.

5.13.5 Performing the Technical Review of a Revision

- 5.13.5.1 The TECHNICAL REVIEWER **SHALL** perform a review of the revision per the requirements of section 5.9 to include:

- a. ENSURE that each affected WORK DOCUMENT is listed on the ECO Revision.
1. IF releasing a Danger tag, THEN ALL Signed On Job Items **SHALL** be listed for Revision Approval.

- 5.13.5.2 Components restored to a position other than one contained in an approved procedural lineup **SHALL** be re-listed as untagged line items to ensure the component is returned to its REQUIRED POSITION upon RELEASE of the ECO. (Reference Step 2.2.38)

- 5.13.5.3 WHEN the requirements of this section are complete, AND the TECHNICAL REVIEWER has performed the second review of the ECO, THEN the TECHNICAL REVIEWER **SHALL**:

- a. SIGN the “REVIEWED BY” block and
- b. FORWARD the Revision to the ISSUING AUTHORITY.

5.13.6 WORK GROUP Approval of the Revision

- 5.13.6.1 WHEN requested, THEN the ACCEPTOR or designee **SHALL** perform the following:

- a. Approve the revision job item
1. Review the revision to determine if BOUNDARIES are affected for the job.

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2. IF BOUNDARIES were affected, THEN ENSURE the new BOUNDARIES provide protection.
 - A. IF new BOUNDARIES are NOT adequate, THEN DO NOT APPROVE the revision. Contact the ISSUING AUTHORITY.
 - B. BOUNDARIES **SHALL** be re-verified and signed for after the revision is complete prior to returning to work.
3. IF BOUNDARIES are intact or new BOUNDARIES are established, THEN approve the revision by:
 - A. In Oracle,
 - Query the ECO
 - Go to the Revision page
 - Click in the “REV APP” block for the applicable job item.
 - Click Yes or No if BOUNDARIES are affected.
 - SAVE DATA.

OR
 - B. IF on an manual ECO revision, THEN
 - Sign the REVISION APPROVAL block and state if BOUNDARIES are affected on the ECO Revision Form (Job Items) page.
- b. The ACCEPTOR or designee for each affected job item **SHALL** brief **ALL** active workers on the revision changes to the ECO.
- c. Once the ECO BOUNDARIES are revised, the ACCEPTOR or designee of the affected WORK DOCUMENTS **SHALL** re-verify the revised ECO BOUNDARIES per the requirements of Section 5.12.4.

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NOTE

- Oracle will automatically make the revision “ready for rev com” when the revision status goes to complete.
- IF using the ECO Revision Manual Form (form 4), THEN the issuing authority may leave the revision completion block blank or mark it N/A for the acceptors who identified the ECO revision as not affecting their job BOUNDARIES.

5.13.6.2 On the ECO Revision Manual form, each ACCEPTOR who identified that the ECO revision affected their job BOUNDARIES, **SHALL VERIFY** that the ISSUING AUTHORITY or designee has designated the revision as Ready For Revision Completion by completing the “READY FOR REV COM” field.

5.13.6.3 Each ACCEPTOR, who identified that the ECO revision affected their job BOUNDARIES, **SHALL** document that the ECO revision is complete AND the revised ECO BOUNDARIES are re-verified by signing for Revision Completion.

a. In Oracle – Click in the “REV COM” block for the applicable job item and save data.

b. On the Manual form – Sign in the “REVISION COMPLETION SIGNATURE” field for the applicable job item.

5.13.7 ISSUING AUTHORITY Approving the Revision

5.13.7.1 Components restored to a position other than one contained in an approved procedural lineup **SHALL** be re-listed as untagged line items to ensure the component is returned to its REQUIRED POSITION upon RELEASE of the ECO. (Reference Step 2.2.38).

5.13.7.2 The ISSUING AUTHORITY **SHALL ENSURE** that each affected WORK DOCUMENT is listed on the ECO Revision.

a. IF releasing a Danger tag, THEN ALL Signed On Job Items **SHALL** be listed for Revision Approval.

b. The Revision REQUESTER **SHALL** coordinate with the ISSUING AUTHORITY to ensure all affected ACCEPTORS for jobs in progress are notified of the pending revision for ACCEPTOR approval and to resolve any issues.

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- 5.13.7.3 The ISSUING AUTHORITY **SHALL** VERIFY that all affected ACCEPTORS or designee have documented approval of the pending ECO revision for each applicable WORK DOCUMENT on the ECO.
- 5.13.7.4 After affected job items have approved the revision, the ISSUING AUTHORITY **SHALL** approve the revision per the requirements of Section 5.10.
- 5.13.7.5 The ISSUING AUTHORITY **SHALL** direct the performance of the ECO Revision.

NOTE

The process of revising an ECO is outlined in Addendum 1, ECO Process Flowcharts.

5.13.8 Performing/Verifying the Revision

- 5.13.8.1 The PERFORMER and VERIFIER **SHALL** perform the revision per the requirements of Section 5.11.
- 5.13.8.2 Following performance and independent verification of the ECO revision, the ISSUING AUTHORITY or designee **SHALL** perform a review to include:
- a. The performance of the ECO revision is complete.
 - b. Required Independent Verifications are complete.

NOTE

Oracle will automatically make the revision "ready for rev com" when the revision status goes to complete.

- c. The ECO revision is ready for craft review and walkdown by documenting the "Ready for Rev Com" block.

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5.14 Releasing an ECO

NOTE

- Refer to Addendum 5, Grounding Power Distribution Equipment, for the removal of ECO tags for grounding devices.
- The process of Releasing an ECO is outlined in Addendum 1, ECO Process Flow Charts.

5.14.1 IF an ECO is released prior to any job items being accepted, THEN a note **SHALL** be recorded on the ECO to explain the occurrence.

5.14.2 Signing Off Worker Tracking Form

5.14.2.1 The WORKER SHALL sign off the Worker Tracking Form (Form 6 or computer).

- a. Worker Sign Off signatures MAY be obtained per telecom for unique and specific situations (e.g., not on-site, dressed out in Contaminated Area awaiting PMT).
- b. IF a supervisor signs a worker off the Worker Tracking Form, THEN a comment **SHALL** be made.

5.14.3 Releasing (Signing Off) Job Items

5.14.3.1 It **SHALL** be **mandatory** that an ACCEPTOR or designee signing off a Job Item fully understands that this approval means:

- The devices listed on the ECO may be repositioned by the OPERATIONAL AUTHORITY.
- Operation of the listed components **SHALL** have no adverse effect on the safety of any remaining work under the work document. (reference Step 2.7.5)

Equipment Clearance Order Instructions

5.14.3.2 Prior to signing OFF the Job Item, the ACCEPTOR or designee **SHALL** ensure the following has been completed:

- All safety devices and guards are in place, IF all post maintenance or modification testing is complete.
- Electrical connections are properly made (i.e., tight) and junction boxes are closed IF all post maintenance or modification testing is complete. (Reference Step 2.2.4)
- ENSURE ALL WORKERS are signed off the ECO Worker Tracking Form (Form 6 or computer).

CAUTION

A Temporary Supervisor MAY perform the functions of a Supervisor under the direction of this procedure ONLY while actively filling the Supervisory position. Having been a Temporary Supervisor in the past DOES NOT meet the intent of this procedure with regards to allowing Supervisors to release ECO Tags.

5.14.3.3 Only a Supervisor MAY RELEASE an ECO, unless the ECO is being RELEASED by the person who originally ACCEPTED it.

- a. IF the original ACCEPTOR for a work activity is onsite, THEN the original ACCEPTOR should RELEASE the ECO. Only in rare situations should a Work Group Supervisor RELEASE the ECO (e.g., dressed out in RCA, etc.).

5.14.3.4 Supervisors RELEASING an ECO for another ACCEPTOR or designee **SHALL** notify the ACCEPTOR or designee verbally prior to RELEASING the ECO, unless the ACCEPTOR or designee is offsite.

5.14.3.5 IF during an EMERGENCY the ISSUING AUTHORITY is unable to contact the ACCEPTOR or their immediate Supervisor, THEN the ISSUING AUTHORITY MAY release the ECO.

5.14.3.6 IF the ISSUING AUTHORITY releases an ECO for an ACCEPTOR, THEN the ISSUING AUTHORITY SHOULD make every attempt to contact all ACCEPTORS and/or their supervision (Reference Step 2.2.4).

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- 5.14.3.7 IF a work activity for an ECO is inadvertently released, THEN PERFORM the following: (Reference Step 2.7.10)
- a. Contact the ISSUING AUTHORITY to RECORD the appropriate information about the released Work Document on the ECO and CONTACT that WORK GROUP to accept the Job Item again.
- 5.14.3.8 To sign OFF a Job Item,
- a. In Oracle, Perform the following:
1. Query your ECO on the applicable ECO Form (e.g., ECO Main Form, ECO Craft Form).
 2. Click in the “Craft Sign Off” block for the applicable WORK DOCUMENT and associated WORK GROUP.
 - A. IF a supervisor is signing OFF the Job Item, THEN click in the "WORK GROUP SUPV OVERRIDE" block.
 3. Answer “YES” that Operations has your permission to release the ECO.
 4. Click the SAVE button and enter your e-sign password.
 5. CONTACT OPERATIONS AND LET THEM KNOW YOU ARE SIGNED OFF.
- b. On the ECO Manual form Job Items Page,
1. Sign in the “WORK GROUP SIGN OFF” block for the applicable WORK DOCUMENT AND the associated WORK GROUP.

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5.14.4 Preparing a Release Revision

NOTE

- System restoration during release of an ECO is accomplished by at least one of the following methods:
 - a) Components aligned as specified by the ECO during tag removal
 - b) Components aligned using applicable portions of a system lineup contained in an approved plant procedure during tag removal
 - c) Components aligned using steps of an approved plant procedure following tag removal
- The ISSUING AUTHORITY may waive the requirement for Independent Verification for ECOs requiring Independent Verification per 0PGP03-ZA-0010, Performing and Verifying Station Activities.
- IF the ISSUING AUTHORITY does NOT waive the requirement for Independent Verification, THEN ECOs requiring Independent Verification **SHALL** list all components inside the BOUNDARIES to ensure proper system alignment after restoration.
- The ISSUING AUTHORITY **SHALL** approve use of system lineups for ECO restorations in lieu of listing all components on the ECO.
- IF a system lineup is used to align components, THEN the lineup **SHALL** be reviewed to ensure that it includes all of the inside BOUNDARY components. Components in the lineup that are not inside the BOUNDARY of the ECO may be marked N/A.

5.14.4.1 The PREPARER **SHALL** perform the following:

- a. ENSURE restoration position for locked and throttled valves is per the applicable lineup consistent with existing plant conditions. (Reference Step 2.2.36)
 - 1. IF a Locked-in-Place Throttled Valve is listed on the ECO for "Restoration Only", THEN the locking device installed **SHALL** be the only thing that is checked and verified.
- b. ENSURE system lineups or procedures performed for system restoration are entered as line items on the ECO. (Reference Step 2.2.33)
- c. IF preparing the revision in Oracle, THEN perform the following:
 - 1. ENSURE that **YOU** are logged into ORACLE by verifying the correct user ID at the top of the computer form.

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NOTE

New line items to be performed (i.e., procedure step, etc.) need to be added to the ECO Main Form (see Section 5.8.2) prior to clicking on the “Release” button.

2. Query the ECO number on the ECO page and Click on the “RELEASE” button at the top of the ECO form.

NOTE

- Components SHOULD be listed in the reverse sequence of the hanging sequence unless the OPERATIONAL AUTHORITY dictates otherwise.
- IF no execution sequence is specified, THEN the ECO is performed in the order written.

3. RECORD the Execution Sequence in which the component is to be manipulated in the “EXE SEQ” block. (optional)

NOTE

For a “Release All Tags” revision, an ACTION of “Release” or “Restore” is required so the database can use the restoration position as the "REQUIRED" position and see that the line item is released.

4. ENTER the required Action
 - RELEASE a tag or RESTORE a component – requires a restoration position.
5. Record the required “RESTORATION” position.
 - A. Caution Tags used to provide information do not require an actual "REQUIRED" position be listed. A REQUIRED POSITION of “TAG REMOVED” SHOULD be used.

Equipment Clearance Order Instructions

6. WHEN the requirements of this section are complete AND the PREPARER has performed the initial review of the revision, THEN the PREPARER **SHALL**:
 - A. CLICK in the “PREPARED BY” block on the Revision form.
 - B. SAVE DATA.
 - C. INFORM the TECHNICAL REVIEWER the revision is ready for review.
- d. IF preparing the Revision manually (NOT in ORACLE), THEN the PREPARER **SHALL** prepare the revision per the requirements of Section 5.8.3 to include: (See Form 4)
 1. RECORD the Temporary ECO number from the ECO on the ECO Revision Form.
 2. IDENTIFY the next sequential ECO revision number to be used.
 3. RECORD the revision number and reason for the revision.
 4. Page 2 **SHOULD** be marked as N/A, since it is a release all tags revision.

NOTE

Line items numbers on the revision form should coincide with the line item numbers on the ECO main form or previous revisions. IF additional line items are being RESTORED, THEN they are not required to be put on the main form, if the revision is being created manually.

5. Complete information for line items on Page 3.
6. WHEN the requirements of this section are complete, AND the PREPARER has performed the initial review of the ECO, THEN the PREPARER **SHALL**:
 - A. SIGN the “PREPARED BY” block on Page 1 and
 - B. FORWARD the revision to the TECHNICAL REVIEWER.

Equipment Clearance Order InstructionsNOTE

IF the ISSUING AUTHORITY is performing the technical review and signing for Approval concurrently, THEN the Technical Reviewer block can be signed at the same time.

- 5.14.5 The TECHNICAL REVIEWER **SHALL** perform a review of the revision per the requirements of Section 5.9 to include:

NOTE

- The ISSUING AUTHORITY may waive the requirement for Independent Verification for ECOs requiring Independent Verification per 0PGP03-ZA-0010, Performing and Verifying Station Activities.
- IF the ISSUING AUTHORITY does NOT waive the requirement for Independent Verification, THEN ECOs requiring Independent Verification **SHALL** list all components inside the BOUNDARIES to ensure proper system alignment after restoration.
- For systems requiring Independent Verification per 0PGP03-ZA-0010 (Performing and Verifying Station Activities), an entry **SHALL** be made in OAS to ensure that the respective system lineups are completed prior to declaring the system operable.
- The ISSUING AUTHORITY **SHALL** approve use of system lineups for ECO restorations in lieu of listing all components on the ECO.
- IF a system lineup is used to align components, THEN the lineup **SHALL** be reviewed to ensure that it includes all of the inside BOUNDARY components. Components in the lineup which are not inside the BOUNDARY of the ECO may be marked N/A.

- 5.14.5.1 IF the ECO requires Independent Verification, THEN ENSURE all components inside the BOUNDARIES are included in the ECO.

CAUTION

Locked and throttled valves **SHALL** be clearly identified on the ECO.

- 5.14.5.2 ENSURE restoration position for locked and throttled valves is per the applicable lineup consistent with existing plant conditions.
(Reference Step 2.2.36)

- a. IF a Locked-in-Place Throttled Valve is listed on the ECO for "Restoration Only", THEN the locking device installed **SHALL** be the only thing that is checked and verified.

Equipment Clearance Order Instructions

- 5.14.5.3 ENSURE system lineups or procedures performed for system restoration are entered as line items on the ECO.
(Reference Step 2.2.33)
- 5.14.5.4 ENSURE the item/tag number restoration positions and sequence are consistent with existing plant conditions and Technical Specification requirements.
- 5.14.5.5 WHEN the requirements of this section are complete, AND the TECHNICAL REVIEWER has performed the second review of the ECO, THEN the TECHNICAL REVIEWER **SHALL**:
- SIGN the “REVIEWED BY” block and
 - FORWARD the Revision to the ISSUING AUTHORITY.
- 5.14.6 The ISSUING AUTHORITY **SHALL** perform a review of the revision per the requirements of Section 5.10 to include:
- 5.14.6.1 ENSURE all ACCEPTORS have released their respective job items.

CAUTION

Locked and throttled valves **SHALL** be clearly identified on the ECO.

- 5.14.6.2 ENSURE the item/tag number restoration positions and sequence are consistent with existing plant conditions and Technical Specification requirements. (Reference, Step 2.3.5)

NOTE

- A procedure lineup MAY be used for inside BOUNDARY components at the discretion of the ISSUING AUTHORITY. IF used, THEN the referenced lineup **SHALL** be reviewed to ensure that it includes all of the inside BOUNDARY components. Components in the lineup which are not inside the BOUNDARY of the ECO may be marked N/A.
- For systems requiring Independent Verification per 0PGP03-ZA-0010 (Performing and Verifying Station Activities), an entry **SHALL** be made in OAS to ensure that the respective system lineup is completed prior to declaring the system operable.

- 5.14.6.3 WHEN the requirements of this section are complete, THEN the ISSUING AUTHORITY **SHALL**:
- SIGN the “APPROVED BY” block
 - Designate a performer

Equipment Clearance Order Instructions

- 5.14.7 The PERFORMER **SHALL** perform the following:
(References Steps 2.2.9, 2.2.34, 2.4.4)

NOTE

Fuses removed from equipment MAY be verified correct for reinstallation in the Fuse and Relay Database.

- 5.14.7.1 VERIFY the requirements of 0PGP03-ZM-0021 (Control of Configuration Changes) are met for any fuses removed from equipment and stored in a central location.
- 5.14.7.2 REMOVE the tag and ALIGN each component by:
- a. Sequence specified.
 - b. Position specified.
 1. IF the "REQUIRED" position of a component needs to be changed after the revision has been approved, THEN the ISSUING AUTHORITY **SHALL** update the "REQUIRED" position on the ECO.
- 5.14.7.3 DOCUMENT in the "PERFORMED BY" block on the ECO to state that each item has been positioned.
- 5.14.7.4 To update Oracle, PERFORM the following:
- a. Verify that all applicable "Performed By" signature blocks on the ECO Revision Official copy are completed.
 - b. Query the ECO you are working on.
 - c. Go to the Revision form.
 - d. Update the "Status" field for the applicable line items that were completed by:
 1. Type an "C" in the "Status" field for the applicable Line Items
 2. Click the Save button
 3. Enter your e-sign password
 4. Return the ECO Official copy to the Control Room.

Equipment Clearance Order Instructions

OR

- e. Update the “Status” field by using the LOV by:
1. Select “The Revision Line Item has been Completed” from the LOV in the “Status” field for the applicable Line Items.
 2. Click the Save button
 3. Enter your e-sign password
 4. Return the ECO Official copy to the Control Room.

OR

- f. IF all (or remaining) Line Items were completed, THEN
1. Click the "tag status" hot key at the top of the form.
 2. Click the “Complete” button (A screen will pop up that states that all valid line items are Complete).
 3. Type in your e-sign password.
 4. Return the ECO Official copy to the Control Room.

5.14.7.5 Arrange for any required Independent Verifications OR Return the ECO Official copy to the Control Room.

5.14.7.6 RETURN removed tags to the ISSUING AUTHORITY after completing restoration of the ECO. (Reference Step 2.2.35)

- a. IF a tag is radiologically or chemically contaminated, lost, or otherwise physically unsuitable to be returned, THEN inform the ISSUING AUTHORITY the reason the tag was not returned.

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5.14.8 WHEN required to perform an Independent Verification, THEN the VERIFIER **SHALL** perform the following:

5.14.8.1 The ISSUING AUTHORITY MAY waive the requirement for Independent Verification per Section 5.5, during system restoration provided one of the following are met:

- a. An instrument isolation valve is exempt from this requirement provided that the operability of the system would not be affected if the valve was out of position. The intent of this exemption is shown by the following two examples:
 - WHEN replacing a CVCS filter, THEN the local pressure indicator isolation valve need NOT be listed.
 - P&IDs exist which show ALL the valves in the ESF Diesel Generator support systems. These include the local instrument test manifolds and have been designated with standard numbering. These valves need NOT be listed.
- b. For systems requiring Independent Verification per 0PGP03-ZA-0010 (Performing and Verifying Station Activities), an entry **SHALL** be made in OAS to ensure that the respective system lineup is completed prior to declaring the system operable.

5.14.8.2 All grounding devices **SHALL** be Dual Verified following removal to prevent returning electrical power distribution equipment to service with a ground installed. (Refer to Addendum 5)

- This verification **SHALL** be performed by a member of the Operations Department. This requirement SHALL NOT be waived.

5.14.8.3 VERIFY the correct tag was removed for each component listed on the ECO.

5.14.8.4 INDEPENDENTLY VERIFY each component positioned by the ECO is in its proper position.

5.14.8.5 DOCUMENT in the "VERF'D BY" block to indicate that the component has been INDEPENDENTLY VERIFIED.

Equipment Clearance Order Instructions

5.14.8.6 To update Oracle, PERFORM the following:

- a. Verify that all applicable "Verfd By" signature blocks on the ECO Official copy are filled in.
- b. Query the ECO you are working on.
- c. Go to the Revision Form
- d. Update the "Verfd" field for the applicable line items that were verified by:
 1. Clicking the "Verfd" check box for the applicable Line Items
 2. Click the Save button
 3. Enter your e-sign password

OR
- e. IF all (or remaining) Line Items were Verified, THEN
 1. Click the "tag status" hot key
 2. Click the "Verified" button (A screen will pop up that states that all valid line items are Verified)
 3. Type in your e-sign password

5.14.8.7 Return the ECO Official copy to the Control Room.

5.14.9 The ISSUING AUTHORITY **SHALL** PERFORM the following:

5.14.9.1 ENSURE that all tags, except those excused per Step 5.14.7.6a, for the released clearance have been removed properly by verifying the removed tags against the ECO. (Reference Step 2.2.35)

5.14.9.2 ENSURE that the ECO Index is updated to reflect the closed status of Temporary ECOs.

5.14.10 ARCHIVE or TRANSMIT the completed ECO package to RMS for retention, per 0POP01-ZA-0015.

Equipment Clearance Order Instructions

5.15 Voiding an ECO

NOTE

WHEN the first ECO TAG for an ECO is hung, THEN an ECO becomes a quality document AND the retention requirements stated on the ECO apply.

- 5.15.1 An ECO MAY be voided by the ISSUING AUTHORITY at any time prior to the hanging of a tag(s).
- 5.15.2 WHEN tags are hung, THEN an ECO **SHALL** NOT be voided. It **SHALL** be RELEASED.
- 5.15.3 To void an ECO, perform the following:
- 5.15.3.1 RECORD "VOID" on the ECO.
 - 5.15.3.2 ENSURE the ECO is recorded as "VOID" in the ECO index, if applicable.
 - 5.15.3.3 DISCARD the ECO.

Equipment Clearance Order Instructions

5.16 ECO Audit and Reviews

- 5.16.1 The ISSUING AUTHORITY or designee **SHALL** perform a Quarterly Review of ECOs which are greater than 31 days old. (Reference Step 2.5.2)
- 5.16.1.1 Print out a "Walkdown" copy of each ECO to be audited to verify tags in the field.
- 5.16.1.2 Verify an ECO line item exists for each tag hanging.
- 5.16.1.3 Ensure all tags are legible and attached properly.
- 5.16.1.4 Verify designated components are in their correct position.
- 5.16.1.5 Document performance of the audit by signature and date on the "Official" copy of the ECO.
- 5.16.1.6 The Issuing Authority **SHALL** resolve all noted discrepancies.
- 5.16.2 **RECORD** the results of the Quarterly Review on the Preventive Maintenance (PM) document directing the review.

NOTE

The intent of these requirements is to correct the unusual condition. IF the ISSUING AUTHORITY determines that the tag or ECO is still needed, THEN it may be left in place at the discretion of the Shift Supervisor.

- 5.16.3 IF a TEST TAG was issued greater than one month ago, THEN contact the TEST TAG Owner to release the tag.
- 5.16.4 IF a CAUTION TAG was issued more than six months ago, THEN contact the ISSUING AUTHORITY for RELEASE of the tag.

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NOTE

- IF the job item listed the ECO is scheduled for upcoming work (i.e. scheduled in the future, planned for upcoming outage), THEN the ECO MAY be left in place and management notification is not required. Subsequent audits should address any issues.
- Corrective actions should include, as a minimum, to have the responsible WORK GROUP ensure the ECO is still required for safety to support work.

5.16.5 IF an ECO has been issued for greater than six months, THEN the Unit Operations Division Manager **SHALL** be notified to determine corrective actions.

5.16.6 IF an ECO has been issued for greater than 12 months, THEN the Operations Department Manager **SHALL** be notified to determine corrective actions.

CAUTION

ECO greater than 18 months old **SHALL NOT** be released and then hung again for the same component or device to reset the ECO clock. To extend the 18-month time limit for an active ECO an evaluation must be performed to determine if the applicable ECO affects the STPEGS licensing basis. (Reference Step 2.7.14)

5.16.7 IF any ECO was issued more than 18 months ago, THEN the Plant Manager **SHALL** be notified and a Condition Report **SHALL** be initiated in accordance with 0PGP03-ZX-0002 (Condition Reporting Process) to evaluate if the applicable ECO affects the STPEGS Licensing Basis if the ECO is to remain active.

5.16.7.1 IF an evaluation is not performed, THEN release the ECO.

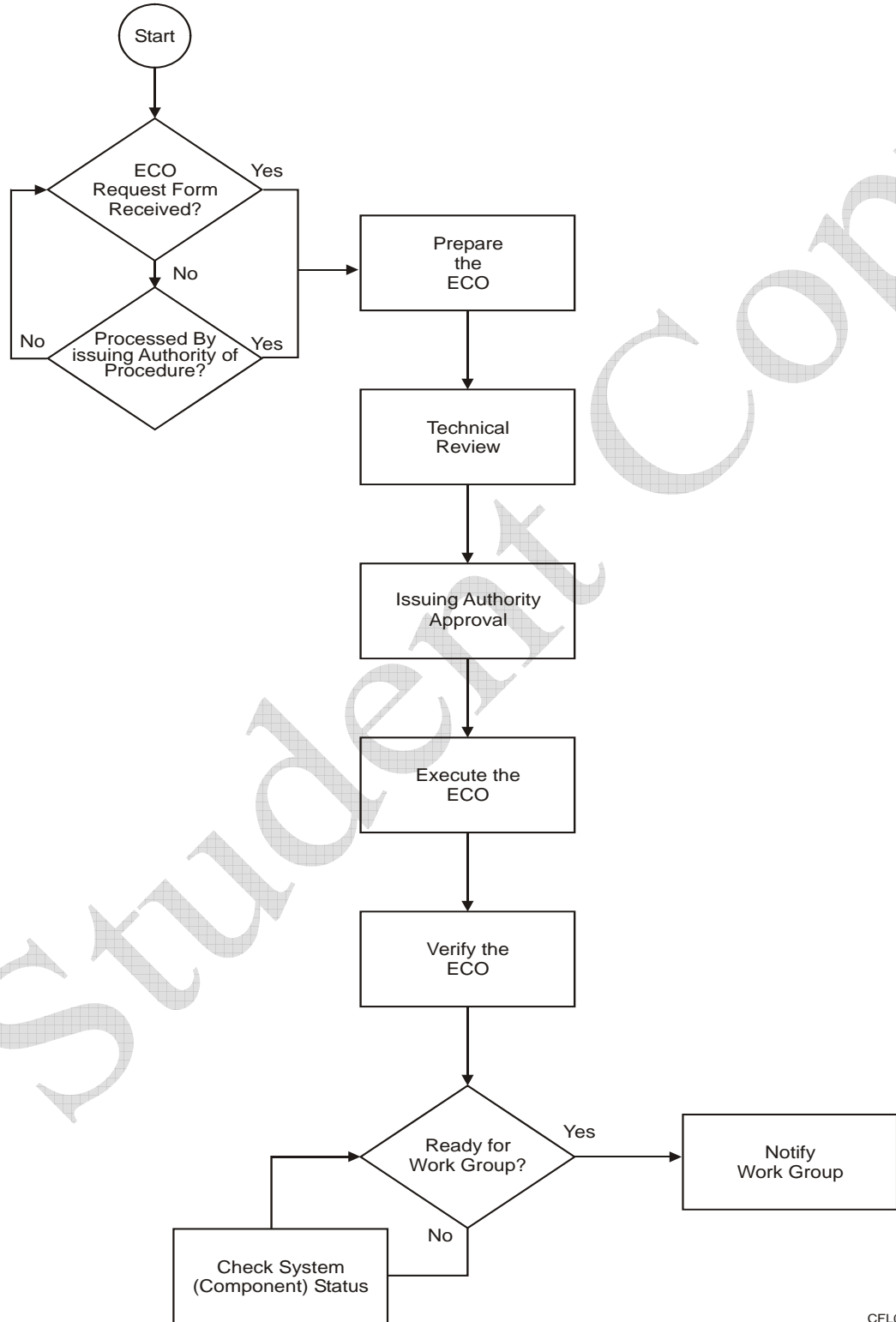
5.16.7.2 IF the evaluation determines a change to the facility is required, THEN initiate a Condition Report for Engineering to request a Design Change Package as per 0PGP04-ZE-0312, Design Change Implementation.

Equipment Clearance Order Instructions**6.0 Supporting Documents**

- 6.1 Addendum 1 - ECO Process Flow Charts
- 6.2 Addendum 2 - Mechanical Isolation Guidelines
- 6.3 Addendum 3 - MOV Manual Seating Guidelines
- 6.4 Addendum 4 - Electrical Isolation Guidelines
- 6.5 Addendum 5 - Grounding Power Distribution Equipment
- 6.6 Addendum 6 - Breaker Racking Tags
- 6.7 Form 1 - Temporary ECO Log
- 6.8 Form 2 - Equipment Clearance Order Request/Feedback Form
- 6.9 Form 3 - Equipment Clearance Order Form
- 6.10 Form 4 - Equipment Clearance Order Revision Form
- 6.11 Form 5 - ECO BOUNDARY Verification Datasheet
- 6.12 Form 6 - ECO Worker Tracking Form

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Addendum 1	ECO Process Flow Charts		Page 1 of 4

ECO Preparation To Hanging Flow Chart



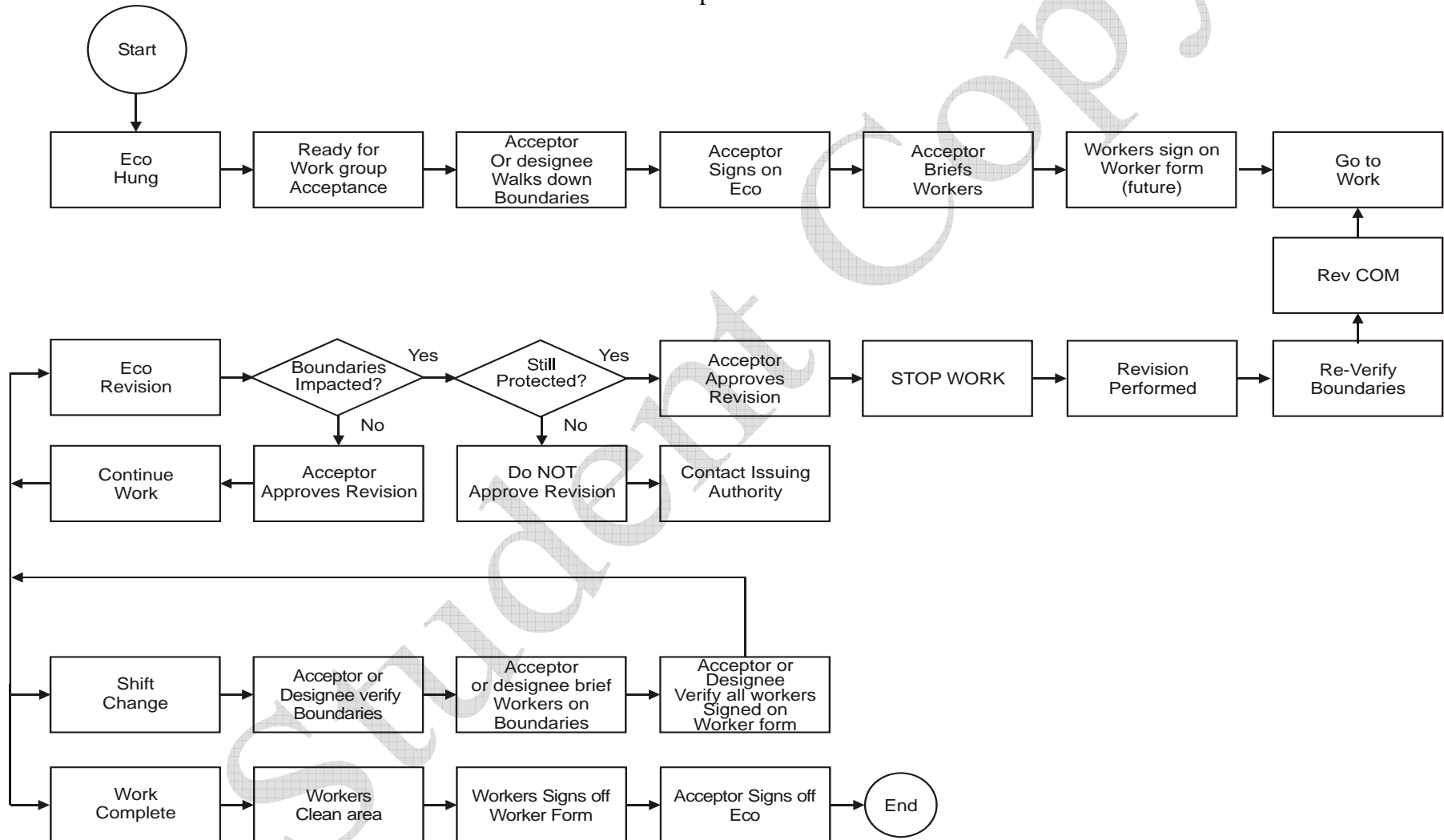
Equipment Clearance Order Instructions

Addendum 1

ECO Process Flow Charts

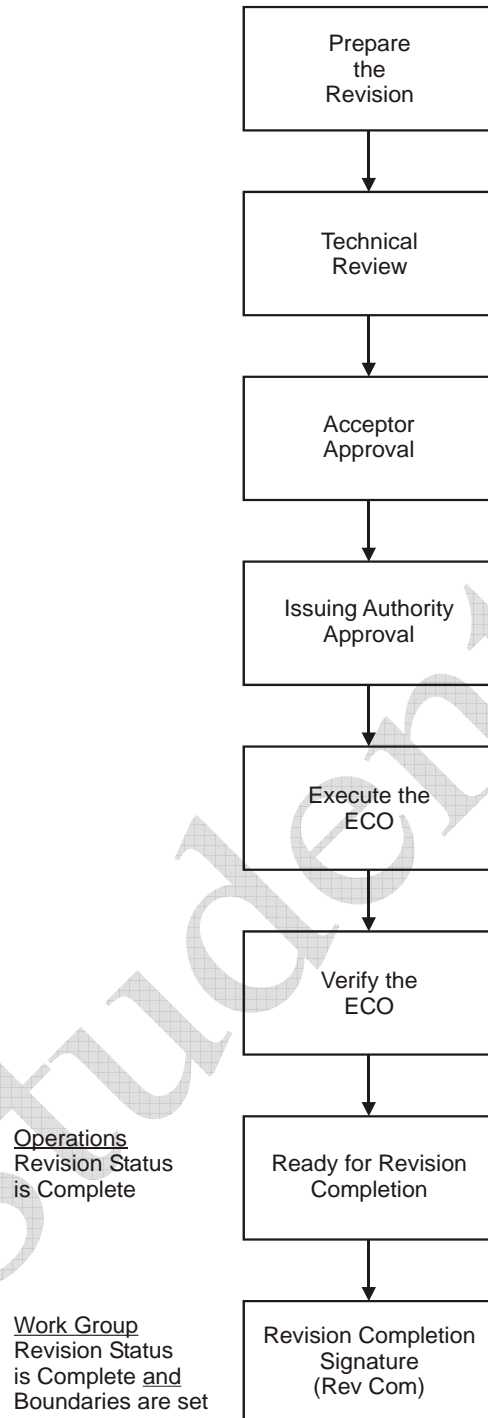
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ECO Acceptor Flow Chart



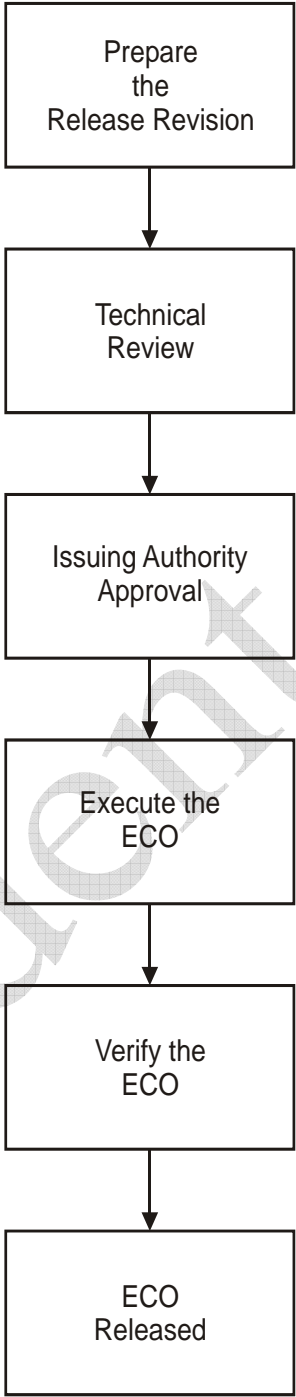
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ECO Modify Type Revision Flow Chart



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Addendum 1	ECO Process Flow Charts		Page 4 of 4

ECO Release All Type Revision Flow Chart



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Addendum 2	Mechanical Isolation Guidelines		Page 1 of 3

1. The approval of the applicable Unit Operations Division Manager is required to use a check valve, relief valve, fail open (FO) valve or a fail indeterminate (FI) valve as a BOUNDARY for work under an ECO. Consideration **SHALL** be given to using other components as a BOUNDARY or installing gagging devices to provide isolation.
 - 1.1 IF it is necessary to use check valves, relief valves, fail open or fail indeterminate valves as a BOUNDARY, THEN perform the following: (Reference Step 2.2.17)
 - 1.1.1 This configuration **SHALL** be agreed to by the Craft Supervisor, Issuing Authority and the applicable Unit Operations Division Manager prior to accepting the ECO.
 - 1.1.2 This configuration **SHALL** be documented on the ECO.
2. At a minimum, a single vent or drain path **SHALL** be tagged open and marked as a BOUNDARY on the ECO to maintain the system depressurized in the event of leakby. Exceptions to this **SHALL** be documented on the ECO by the ISSUING AUTHORITY. Additional vents and drains may be opened with the permission of the ISSUING AUTHORITY to facilitate draining provided that they are subsequently listed on the ECO for restoration. (Reference Step 2.2.35)

NOTE

- Instrument air (IA) valves are not routinely danger tagged closed
- The intent of this guideline is to maintain the normal source of air available to a component for use by the work group during maintenance.

3. IA valves **SHALL** only be DANGER TAGGED for the following reasons:
 - The IA valve is a BOUNDARY for work on a section of IA piping.
 - The IA valve must be closed to maintain the operated component in the failed position or deactivated condition.

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Addendum 2	Mechanical Isolation Guidelines		Page 2 of 3

4. Motor Operated Valves (MOV) used as BOUNDARIES, vents or drains for an ECO **SHALL** be tagged as follows (Reference Step 2.2.42):
 - The MOV handswitch shall be danger tagged in a position to prevent operation of the valve while the power supply is being deenergized
 - The MOV power supply shall be danger tagged in the deenergized position.
 - The MOV local handwheel shall be danger tagged to prevent local operation of the valve (the "required position" for this tag should be "tag hung" or "do not operate").
 - See Addendum 3 (MOV Manual Seating Guidelines) for additional guidelines if the MOV must be mainseated.
5. Motor Operated Valves (MOV) inside the BOUNDARIES of an ECO **SHOULD NOT** be DANGER TAGGED solely for the purpose of draining the system.
 - MOVs may be positioned open and powered off.
 - A CAUTION TAG may be used to identify the reason for this lineup.

NOTE

The SFP return line contains an anti-siphon hole just below the low water level to prevent gravity drainage due to an open drain valve or due to all credible breaks (non-seismic one -inch piping). During certain maintenance activities, the possibility exists for inadvertent draindown should a large system BREACH in the SFP discharge piping be required. The potential for this non-design basis event is small and would be immediately recognized by plant personnel. To further reduce the possibility of a draindown during maintenance on SFP return line piping, double valve protection should be used. (Reference Step 2.1.1)

6. Double valve protection **SHOULD** be used, if feasible, in the following conditions:
 - Fluid conditions of greater than 150 psig or greater than 200°F.
 - SFP discharge piping.
 - Systems containing radioactive fluids.
 - On the portions of systems containing chemically hazardous fluids.
7. WHEN double valve protection is used, THEN the inner isolation valve **SHALL** be considered the BOUNDARY component.

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Addendum 2	Mechanical Isolation Guidelines		Page 3 of 3

8. WHEN double valve protection is used, THEN precautions SHOULD be taken to minimize the potential for thermal expansion of any fluid trapped between the outer and inner isolation valves (e.g., depressurize pulsation dampers, sequence tags to CLOSE outer isolations, drain and vent, then CLOSE inner isolations, etc.) Whenever possible, a telltale vent or drain valve between the isolation valves should be opened. (Reference Step 2.2.41)
9. WHEN draining down a vessel, pump, pipe, heat exchanger, or other components, THEN the following should be performed:
 - 9.1 ISOLATE the vessel from all other systems, including the waste gas header.
 - 9.2 NOTIFY the Control Room prior to draining any large system or any oil from a system to coordinate the processing of these fluids.
 - 9.3 OPEN a vent and a drain valve, draining the vessel until liquid stops flowing. Specifically when draining tanks and other storage vessels, a vent valve should be opened first to prevent vacuum collapse.
 - 9.4 IF applicable, THEN MONITOR background radiation levels during draining to ensure shielding is NOT being lost.
 - 9.5 All portions of an isolated system should retain operable relief from overpressure conditions.
 - 9.6 ESTABLISH and periodically check loop seals, or use other methods to protect components from a vacuum.
10. The motive force of a pump (e.g., turbine, motor, etc.) SHALL be disabled prior to isolating a pump.
11. The discharge and recirculation valve of a pump should normally be closed before closing the suction valve.

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Addendum 3	MOV Manual Seating Guidelines		Page 1 of 2

CAUTION

- MOVs should be manually seated (handwheel) with minimum applied force to prevent exceeding the compensating spring pack deflection.
- Valve wrenches SHALL NOT be used on MOVs for manual seating. (Reference Step 2.2.24)
- Manually seated valves should be returned to normal position prior to a thermal cycle on the valve.
- For Technical Specification required cooldown, manually seated MOVs SHALL be returned to normal position as soon as possible.
- Any safety-related MOV that is manually seated, SHALL be evaluated for operability by the Unit/Shift Supervisor for entry into OAS.

1. The backseat of a valve may be used as a BOUNDARY for maintenance provided that:
 - 1.1 The applicable WORK DOCUMENT allows for maintenance on the valve on its backseat.
 - 1.2 The Plant Manager has authorized performance of maintenance on the valve on the backseat. This authorization MAY be delivered verbally to the Shift Supervisor.
2. IF a MOV must be manually seated (mainseated) to perform its normal function, THEN the Unit/Shift Supervisor SHALL perform the following:
 - 2.1 EVALUATE the operability of the MOV.
 - 2.2 DISPATCH an Operator to hang a Caution Tag on the applicable MOV controls.
 - 2.3 INITIATE a CR for an Engineering Review of the manually seated MOV to ensure MOV malfunctions are corrected. (Reference Step 2.3.5)

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Addendum 3	MOV Manual Seating Guidelines		Page 2 of 2

3. IF an MOV is backseated electrically to perform its normal function, THEN PERFORM the following:

- 3.1 EVALUATE the operability of the MOV.
- 3.2 CONTACT the On-Duty Electrical Supervisor for assistance in performing the electrical seating operation.
- 3.3 DISPATCH an Operator to hang a Caution Tag on the applicable MOV controls.
- 3.4 INITIATE a CR for an Engineering Review of the manually seated MOV to ensure MOV malfunctions are corrected. (Reference Step 2.3.5)
- 3.5 IF a manually seated MOV must change positions to perform its intended safety function, THEN the MOV SHALL be declared "INOPERABLE" until motor operation can be verified AND an entry SHALL be made in OAS to track inoperability. (Reference Step 2.3.5)
- 3.6 To return a manually seated valve to normal operation, the Unit/Shift Supervisor SHALL PERFORM the following:
 - 3.6.1 RELEASE the ECO per this procedure.
 - 3.6.2 IF valve was entered into OAS, THEN ENSURE the following is performed:
 - 3.6.2.1 Satisfactory Post-Maintenance Testing has been performed (i.e., stroke-tested).
 - 3.6.2.2 The manually seated valve is returned to normal configuration.
 - 3.6.2.3 The associated system is in its proper safety configuration.
 - 3.6.2.4 DECLARE the valve OPERABLE.
 - 3.6.2.5 Close-out the associated OAS entry.

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Addendum 4	Electrical Isolation Guidelines		Page 1 of 1

1. The ECO line item description for a potential transformer fuse and the label in the field **SHALL** be a verbatim (letter for letter) match.
2. WHEN electrical drawers (i.e., Potential Transformer fuses) or large fuses (i.e., 480 VAC or higher) NOT routinely operated by Operations are included AND specifically listed on an ECO, THEN an Electrician **SHOULD** be requested to assist in hanging the ECO. (Ref. 2.2.11)
3. For ECO associated with maintenance on a breaker, IF the work instructions include VERIFICATION steps for restoration of the breaker and any associated control, closing or tripping power fuses, THEN ECO tags on the breaker are not required.
4. There is no requirement to include the control power fuses for 480V load center breakers on the ECO unless work is to be performed on the control power circuit. On some 480V load center breakers, the control power fuses are located near an exposed energized bus.
5. 4160V and 13.8KV breakers **SHALL** have their closing and tripping fuses included on the ECO to ensure configuration control upon RELEASE of the ECO.
6. Relay rack disconnect switches (i.e., fuse blocks such as Buchanan-358 or similar) should NOT be used as an ECO BOUNDARY unless the fuse block is the only available BOUNDARY. IF a fuse block is used as a BOUNDARY for an ECO, THEN REMOVE the fuse from the block per 0PGP03-ZM-0021, Control of Configuration Changes, AND TAG the fuse block. (Reference Step 2.2.26)
7. It is permissible for a breaker to be removed or placed into the cubicle with a DANGER TAG, TEST TAG or CAUTION TAG attached to the cubicle door. (Refer to Step 5.1.2)
8. It is permissible for a grounding buggy to be installed in a cubicle with a DANGER TAG or CAUTION TAG attached to the cubicle door for cubicles for which the breaker has been removed.
9. Electrical equipment **SHALL** be considered energized until proven and verified otherwise.
10. Metal clad high voltage switchgear **SHOULD** have covers removed only after the equipment has been deenergized.
11. All doors **SHOULD** be closed and fully fastened before energizing any metal-clad high voltage switchgear.
12. IF an ECO is used to provide electrical safety for work on an electrical bus, THEN the appropriate electrical prints for both the supply side and the load side of the affected bus **SHALL** be reviewed for the ECO preparation and authorization. (Reference Step 2.2.31)
13. DANGER TAGS **SHOULD** be hung on component handswitches to alert the Operator to the status of equipment when removed from service for maintenance or personnel or equipment protection.
14. WHEN tagging remotely operated breakers (e.g., breakers with power lockouts), THEN a tag should be hung locally on the breaker cubicle door to control local operation (i.e., DO NOT OPERATE).

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Addendum 5	Grounding Power Distribution Equipment		Page 1 of 2

CAUTION

- Only members of the Electrical Maintenance organization **SHALL** install or remove GROUNDS including grounding buggies.
- Electrical Maintenance personnel are the preferred personnel for hanging and INDEPENDENTLY VERIFYING ECO Tags on grounds.
- Only members of the Operations Department **SHALL** remove ECO Tags.
- Operations Department personnel **SHALL** solicit the assistance of Electrical Maintenance personnel when hanging ECO Tags for grounding.

NOTE

Grounding devices smaller than 18 AWG **SHALL** be controlled in accordance with instructions in the governing WORK DOCUMENT. Grounding devices 18 AWG or larger and not connected to approved test equipment **SHALL** be controlled by this procedure. The purpose of this control mechanism is to positively ensure the removal of these components prior to reenergizing the equipment. Grounding devices used to drain a static charge from temporary structures (i.e. scaffolding near a transformer) are NOT controlled by the ECO program.

1. Each grounding device installed on power distribution equipment **SHALL** be tagged (Danger Tag or TEST TAG) to maintain the ability to verify the removal of the grounding device. The WORK GROUP may request more than one DANGER TAG on each grounding device. In no event will a single grounding device be tagged with multiple TEST TAGS or a TEST and DANGER TAG.
2. Clearance desk personnel **SHALL** assist the craft as needed to ensure:
 - The tag is filled out properly.
 - Each tagged item is listed as a line item on the ECO that maintains the equipment deenergized.
3. Authorization to hang the tag is obtained in the normal manner as outlined in this procedure.

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Equipment Clearance Order Instructions			
Addendum 5	Grounding Power Dist. Equipment		Page 2 of 2

4. The grounding device **SHALL** only be placed on equipment that has been tested and proven deenergized and maintained in that condition by the ECO that lists the ground.
 - 4.1 Electrical Maintenance personnel **SHOULD** place and verify tags on grounding devices. IF Operations personnel will be performing ground tagging operations, THEN Electrical Maintenance personnel **SHALL** be present to assist.
 - 4.2 The grounding device **SHALL** be placed as needed, THEN tagged.
 - 4.3 WHEN a grounding device has been installed or attached, THEN the Electrical Maintenance or Operations personnel **PERFORMING** and/or **INDEPENDENT VERIFYING SHALL** document this on the ECO per section 5.11.
5. During maintenance, the grounding device may be moved, with **TEST TAGS ONLY**, to other parts of the deenergized equipment, as noted in the instructions on the TEST TAG.
6. The tag **SHALL** remain attached to the grounding device until the respective ECO line item is released.
7. WHEN the need for the grounding device no longer exists **AND** prior to lifting any tag that could allow energizing equipment, THEN the grounding devices **SHALL** be removed from the equipment as follows:
 - 7.1 **OBTAIN** authorization to remove the tag per sections 5.13 or 5.14 of this procedure.
 - 7.2 Electrical Maintenance **SHALL COORDINATE** with Operations to ensure the following:
 - 7.2.1 **REMOVAL** of Danger OR Test Tag(s)—an Operations task.
 - 7.2.2 **REMOVAL** of grounding device (The grounding device may have already been removed if the ground was tagged with a Test Tag.)—a Maintenance task.
 - 7.3 An Operator **SHALL DUAL VERIFY**:
 - 7.3.1 The ground device is removed.
 - 7.3.2 The tag is removed.
 - 7.4 Operations **SHALL** document the ground and ECO Tag removal on the ECO.

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Addendum 6	Breaker Racking TAGs		Page 1 of 1

1. BREAKER RACKING TAGS are used during the actual racking of load center or switchgear breakers that have handswitches in the main control room. This procedure describes the use of these tags and how the tag fits into the ECO program. 0POP01-AE-0001 (Circuit Breaker Operations) directs the use of these tags.
2. A BREAKER RACKING TAG does not conflict with any other tag in this program. It may be placed over a DANGER, TEST or CAUTION TAG.
3. While attached to a control room handswitch the operation of that switch is prohibited.
4. The name of the person in the field controlling the evolution **SHALL** be written on the tag.
5. BREAKER RACKING TAGS are placed and removed when directed by 0POP01-AE-0001.
6. In the event a BREAKER RACKING TAG remains on the control room handswitch and the owner can not be contacted for removal, the Unit/Shift Supervisor may direct that another Operator go to the breaker, inspect the area and report the status to the Unit/Shift Supervisor. The BREAKER RACKING TAG MAY then be removed.

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Equipment Clearance Order Instructions			
Form 2	Equipment Clearance Order Request/Feedback Form (Typical)		Page 1 of 1

Requested by: _____ Ext. _____ Pager # _____

WAN#: _____ CR#: _____ Work Group: _____

Work Description: _____

System Breach Required: <input type="checkbox"/> Yes <input type="checkbox"/> No
Required System Status: <input type="checkbox"/> Isolated <input type="checkbox"/> Vented <input type="checkbox"/> Drained <input type="checkbox"/> Deenergized <input type="checkbox"/> N/A

BOUNDARIES required (attach additional lists as necessary): _____

Special Tagging Instructions or Support Required (I.E. Floor plugs, grounds, cranes, scaffold, test tags): _____

Walkdown Comments/Feedback: _____

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Equipment Clearance Order Instructions			
Form 3	Equipment Clearance Order Form (Job Additions) (Typical)		Page 2 of 3

ECO Number: _____ - _____ - _____
Unit Year Number

Page _____ of _____

Job Number	Work Document WAN / CR / Procedure	Work Group	Job Addition		Ready for Work Group Acceptance	Work Group Sign ON (Print, Sign, Date Time)	Work Group Sign OFF (Print, Sign, Date Time)
			Add	SRO			
(Work Description)							
(Work Description)							
(Work Description)							
(Work Description)							
(Work Description)							
(Work Description)							

THIS FORM, WHEN COMPLETE, SHALL BE RETAINED FOR A MINIMUM OF 5 YEARS.

RMS Z10.03

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Equipment Clearance Order Instructions			
Form 3	Equipment Clearance Order Form (Line Items) (Typical)		Page 3 of 3

ECO Number: - - Page ____ of ____
 Unit Year Number

Line Number	Type	BOUNDARY	Component ID Or Instructions	Verification Required?	Action	Exe. Seq	Required Position	Performed By	Verified By

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Equipment Clearance Order Instructions				
Form 4	Equipment Clearance Order Revision Form (Line Items) (Typical)			Page 3 of 3

ECO Number:

-

-

Unit
Year
Number

Revision Number

Page
of

Line Number	Type	BOUNDARY	Component ID Or Instructions	Verification Required?	Action	Exe. Seq	Required Position	Performed By	Verified By

	0PGP03-ZO-ECO1A	Rev. 6	Page 105 of 112
Equipment Clearance Order Instructions			
Form 5	ECO BOUNDARY Verification Datasheet (Typical)		Page 1 of 1

ECO#_____ Work Document#_____ Work Group_____ Page _____ of _____

Acceptor or Designee Printed Name	Acceptor or Designee Signature	Date/ Time ECO BOUNDARIES Verified	Current ECO Revision Number	Previous ECO Revision Number

RETAIN THIS FORM WITH WORK PACKAGE THROUGH WORK COMPLETION.

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Equipment Clearance Order Instructions			
Form 6	ECO Worker Tracking Form (Typical)		Page 1 of 1

ECO# _____ Work Document# _____ Work Group _____ Page _____ of _____

Dept. or Company	Badge No.	Printed Name	Signature	Sign <u>ON</u> Date/Time	Sign <u>OFF</u> Signature/Date/Time	Comments

RETAIN THIS FORM WITH WORK PACKAGE THROUGH WORK COMPLETION.

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Equipment Clearance Order Instructions			
Form 7	ECO Preparation Checklist (Sample)		Page 1 of 1

ECO Preparation Checklist

(Ref. Procedure Section 5.8)

1. DETERMINE scope of the ECO. _____
2. PREPARE the ECO utilizing appropriate reference sources. _____
3. PREPARE the specified tag for each item to be tagged. _____
4. RECORD a note on the ECO if any special references (i.e., CTC drawings, etc.) were used for preparation. _____
5. REVIEW the ECO for any special requirements (e.g., no vent or drain available, double valve protection not feasible when required, hazardous systems, check valves, relief valves, fail open or fail indeterminate valves used as BOUNDARIES.) _____
 - 5.a. IF any special requirements exist, THEN RECORD a note on the ECO to alert ACCEPTORS of the hazard. _____
6. REVIEW the ECO for the use of check valves, relief valves, fail open or fail indeterminate valves used as BOUNDARIES. _____
 - 6.a. IF any of these exist, THEN RECORD a note on the ECO that the applicable Operations Department/Division Manager approval will be required. _____
7. REVIEW the ECO for the use of backseated/mainseated valves, or work on adjacent flanges. _____
 - 7.a. IF any of these exist, THEN RECORD a note on the ECO that the Plant Manager's approval is required. _____
8. REVIEW the ECO for any impact on Fire Protection, Security, Chemistry or other group that should be given notification of the ECO to be hung. _____
 - 8.a. IF an ECO involves equipment under the operational control of a different department or their assistance is required, THEN RECORD a note on the ECO. _____
 - 8.b. IF an ECO involves a Fire Service System interruption, THEN check the applicable block on Page 1 that notification to the On-Duty Fire Protection Coordinator will be required. _____
 - 8.c. IF Plant Outside Lighting, Emergency Lighting Diesel Generator, or Security Communications are affected by an ECO, THEN check the applicable block on Page 1 that notification to the Security Force Supervisor will be required. _____
9. WHEN the ECO has been prepared, THEN CLICK in the "PREPARED BY" block and forward the ECO to the TECHNICAL REVIEWER. _____

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Equipment Clearance Order Instructions			
Form 8	ECO Technical Review Checklist (Sample)	Page 1 of 1	

ECO Technical Review Checklist

(Ref. Procedure Section 5.9)

1. REVIEW the ECO to ensure adequate personnel and equipment safety is provided by the ECO utilizing the appropriate reference sources. _____
2. REVIEW the ECO for the use of check valves, relief valves, fail open or fail indeterminate valves used as BOUNDARIES. _____
 - 2.a. IF any of these exist, THEN ensure that the applicable Operations Department/Division Manager has approved this use. _____
3. REVIEW each ECO tag's information to verify it is properly completed. _____
4. IF a system or component can NOT be depressurized OR adequately drained prior to breaching the system, THEN DESIGNATE the system as hazardous AND PERFORM the following:
 - 4.a. NOTIFY the appropriate Maintenance Supervisor so the appropriate changes to the work package can be made prior to work start. _____
 - 4.b. RECORD a comment on the ECO stating that the system or component can NOT be depressurized or drained. _____

NOTE

- IF an ECO involves a Fire Service System interruption, THEN the On-Duty Fire Protection Coordinator **SHALL** be given notification prior to the interruption.
- IF Plant Outside Lighting, Emergency Lighting Diesel Generator, or Security Communications are affected by an ECO, THEN the Security Force Supervisor **SHALL** be given notification prior to the interruption.

5. REVIEW the ECO for any impact on Fire Protection, Security, Chemistry or other group that should be given notification of the ECO to be hung. _____
6. VERIFY the ECO sequence is correct. _____
7. IF the system/component will be made inoperable by executing the ECO AND an OAS entry is required, THEN RECORD the OAS number on the ECO. _____
8. WHEN the technical review has been performed, THEN SIGN the "REVIEWED BY" block and forward the ECO to the ISSUING AUTHORITY. _____

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Equipment Clearance Order Instructions			
Form 9	ECO Issuing Authority Checklist (Sample)	Page 1 of 1	

ECO Issuing Authority Checklist

(Ref. Procedure Section 5.10)

NOTE

- An ECO **SHALL** NOT be authorized that will place any part of more than one safety related train in an inoperable status without specific approval from the Shift Supervisor.
- Prior to intentionally placing any safety system, sub-system, train, component, or device out of service, the Technical Specification Limiting Condition for Operation **SHALL** be reviewed.

1. REVIEW the ECO for regulatory requirements (e.g., Technical Specifications, ODCM, etc.). _____
2. REVIEW against current Temporary Modifications. _____
3. IF the ECO reduces the cooling capability of the Spent Fuel Pool Cooling System, THEN ENSURE all compensatory requirements of 0POP02-FC-0001 (Spent Fuel Pool Cooling) are met. _____
4. NOTIFY the SSPS System Engineer prior to authorizing any clearance on SSPS components. _____
5. PERFORM a final administrative review of the ECO:
 - 5.a. REVIEW that the ECO remains valid for plant conditions. _____
 - 5.b. ENSURE the OAS number is on the ECO, if applicable. _____
 - 5.c. REVIEW that the number of ECO Tags matches the number of tag line items on the ECO. _____
6. WHEN ready to authorize issuance of the ECO, THEN CLICK in the “APPROVED BY” block. _____
7. ASSIGN an Operator to perform the ECO. _____
8. IF a system will not depressurize or stop draining, THEN:
 - CONTACT the cognizant supervisor. _____
 - DETERMINE if the work can be performed safely with the existing conditions. _____
 - IF the work can be performed safely, THEN DOCUMENT this on the ECO. _____
 - IF the work can **NOT** be performed safely, THEN take appropriate actions to place the equipment in a safe state (e.g., tighten BOUNDARY valves, expand BOUNDARIES, etc.) or defer the activity. _____

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Equipment Clearance Order Instructions			
Form 10	ECO Performer Checklist (Sample)	Page 1 of 1	

ECO Performer Checklist
(Ref. Procedure Section 5.11)

1. VERIFY that the "APPROVED BY" block has been completed. _____
2. ENSURE the ECO is an "Official" copy. _____
3. Line Items:
 - a) SELECT the ECO tag that is next in the hanging sequence. _____
 - b) VERIFY that the information recorded on the ECO tag agrees with the information on the ECO and the information on the component or equipment plant label (if component of equipment is labeled). _____
 - c) IF additional actions are required, THEN OBTAIN permission from the ISSUING AUTHORITY to perform the additional action and DOCUMENT the additional action on the next available line(s) on the ECO. _____
 - d) ALIGN the component or device to the Position specified. _____
 - e) ATTACH the correct tag to the component in a location that is easily observed. _____
 - f) RE-VERIFY that the information recorded on each ECO tag agrees with the information on the ECO and the information on the component or equipment plant label (if component of equipment is labeled). _____
 - g) DOCUMENT each item positioned in the "HUNG BY" block on the ECO. _____
 - h) REPEAT Line Item steps as required for additional tags. _____
4. IF a system will not depressurize or stop draining, THEN NOTIFY the ISSUING AUTHORITY. _____
5. UPDATE the Oracle ECO database. _____
6. ARRANGE for any required Independent Verifications OR RETURN the ECO Official copy to the ISSUING AUTHORITY. _____
7. WHEN the ECO is ready for work group acceptance, THEN CLICK in the "READY FOR WORK GROUP ACCEPTANCE" block. _____

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Equipment Clearance Order Instructions			
Form 11	ECO Verifier Checklist (Sample)	Page 1 of 1	

ECO Verifier Checklist

(Ref. Procedure Section 5.11)

1. Line Items:

- a) VERIFY that the information recorded on each ECO tag agrees with the information on the ECO and the information on the component or equipment plant label (if component of equipment is labeled). _____
- b) INDEPENDENTLY VERIFY that each ECO tag is hung properly. _____
- c) INDEPENDENTLY VERIFY each component positioned by the ECO is in its proper position. _____
- d) DOCUMENT in the "VERF'D BY" block to indicate that the component has been INDEPENDENTLY VERIFIED. _____
- e) REPEAT Line Item steps as required for additional tags. _____

2. IF a system will not depressurize or stop draining, THEN NOTIFY the ISSUING AUTHORITY. _____

3. UPDATE the Oracle ECO database. _____

4. RETURN the ECO Official copy to ISSUING AUTHORITY. _____

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Equipment Clearance Order Instructions			
Form 12	ECO Acceptor Checklist (Sample)	Page 1 of 1	

ECO Acceptor Checklist

(Ref. Procedure Section 5.12)

1. VERIFY qualifications (ECO Qualified) as documented in Qual King. _____
2. VERIFY the following for the job being performed:
 - The scope and BOUNDARIES of the ECO are adequate to protect personnel working on the job under his/her specified craft. _____
 - The ECO provides for adequate de-energization, draining and/or depressurizing to support the Work Document. _____

NOTE

- A paper copy of the ECO SHALL be used to perform the walkdown to aid in verifying BOUNDARIES and tags.
- For Test Tagged components, only the Energy Source Isolation component (e.g., Breaker or isolation valve) SHALL be walked down.

3. PERFORM a field walkdown to determine that the required correct components have been positioned and tagged:
 - COMPARE each ECO tag to the paper copy ECO. CHECK that the WAN, Unit, TPNS, and Component description are a match. IF any discrepancies are found, THEN NOTIFY the ISSUING AUTHORITY immediately. _____
4. ENSURE the “READY FOR WORK GROUP ACCEPTANCE” block has been completed. IF not, THEN CONTACT the ISSUING AUTHORITY. _____
5. ACCEPT the ECO by signing the computer generated ECO job item:
 - 5.a. LOG into Oracle. _____
 - 5.b. QUERY the ECO on the ECO Main Form. _____
 - 5.c. FIND the applicable Job/WAN on the Job Items page. _____
 - 5.d. CLICK in the "Craft Sign On" block for each WORK DOCUMENT being accepted. _____
 - 5.e. CLICK the “SAVE” button and enter your e-sign password. _____
6. PRINT the Work Group ECO Form and VERIFY that the ACCEPTOR’s name is shown in the “Signed-On Person” block at the bottom of the form. _____
7. ENSURE all active workers on the ECO are briefed on the ECO BOUNDARIES, as a minimum. _____
8. ENSURE all workers are signed on the ECO Worker Tracking Form (Form 6). IF the ACCEPTOR or designee is also a WORKER for the job item, THEN they **SHALL** also sign on ECO Worker Tracking Form. _____

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[illegible]

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Equipment Clearance Order Instructions			
Form 3	Equipment Clearance Order Form (Typical)		Page 1 of 3

ECO Number: 1 - 07 - 0002
Unit Year Number

Unit: 1 2

Page 1 of 3

Hazardous System? ☐ Yes ☒ No

Notify Fire Protection? ☐ Yes ☒ No

Notify Security? ☐ Yes ☒ No

What Is Being Tagged? CLACW PUMP #13 TPNS# 7T241MPA0360

Work Description: **OVERHAUL CLOSED LOOP COOLING PUMP 13**

Prepared By: _____
Signature Date Time

Tech Review By: _____
Signature Date Time

Approved By: _____
Signature Date Time

Notes:
Single Valve Isolation

*Applicant may choose to possibly add a note to informing maintenance **personnel** that this ECO provides only single valve isolation. This is not required to be done.*

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Equipment Clearance Order Instructions			
Form 3	Equipment Clearance Order Form (Job Additions) (Typical)		Page 2 of 3

ECO Number: 1 - 07 - 0002
Unit Year Number

Page 2 of 3

Job Number	Work Document WAN / CR / Procedure	Work Group	Job Addition		Ready for Work Group Acceptance	Work Group Sign ON (Print, Sign, Date Time)	Work Group Sign OFF (Print, Sign, Date Time)
			Add	SRO			
01	137674	MM					
(Work Description)							
(Work Description)							
(Work Description)							
(Work Description)							
(Work Description)							
(Work Description)							

THIS FORM, WHEN COMPLETE, SHALL BE RETAINED FOR A MINIMUM OF 5 YEARS.

RMS Z10.03

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Equipment Clearance Order Instructions				
Form 3	Equipment Clearance Order Form (Line Items) (Typical)			Page 3 of 3

ECO Number: 1 - 07 - 0002
Unit Year Number

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Line Number	Type	BOUNDARY	Component ID Or Instructions	Verification Required?	Action	Exe. Seq	Required Position	Performed By	Verified By
1	D		Closed Loop Auxiliary Cooling Pump #13 CRHS	YES	HANG	1	PULL-TO-LOCK		
2	D	B	480V Load Center 1F2 Cubicle 4C	YES	HANG	2	RACKED-OUT		
3	D	B	AC-0006 CLACW Pump #13 Discharge Valve	YES	HANG	3	CLOSED		
4	D	B	AC-0024 CLACW Pump #13 Suction Valve	YES	HANG	3	CLOSED		
5	D		AC-0223 CLACW Pump #13 Suction Test Connection (or vent)	YES	HANG	4	OPEN		
6	D		AC-0191CLACW Pump #13 Discharge Drain Valve	YES	HANG	4	OPEN		
7	D		AC-0582 CLACW Pump #13 Casing Vent Valve	YES	HANG	4	OPEN		

Applicant may choose any combination of these valves that will provide a vent and drain path. One of them must be Danger Tagged OPEN and designated as a BOUNDARY. The intent is to have a vent and drain open with one tagged to prevent pressurization.

NOTE: The applicant may add a Danger Tag to DPG234 Breaker 13. This is for the Motor Space Heater. Due to the scope of the work that would be performed under this ECO, (pump overhaul) it is not necessary to tag the motor space heater.

NUCLEAR TRAINING DEPARTMENT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

TITLE: CALCULATE MAXIMUM STAY TIME

JPM NO.: A4

REVISION: 1

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: CALCULATE MAXIMUM STAY TIME

JPM No.: A4

Rev. No.: 1

STP Task: 99774: Apply Radiation and Contamination safety procedures.

STP Objective: N91817: STATE the 10CFR20 and STP exposure limitations including extensions for the whole body, skin, and extremities for adults and minors.
N91825: CALCULATE total dose based on dose rate and stay time.

**Related
K/A Reference:** G2.3.1: Knowledge of 10CFR20 and related facility radiation control requirements. (RO: 2.6; SRO: 3.0) (10CFR: 45.10)

References: OPGP03-ZR-0051, Radiological Access Controls

**Task Normally
Completed By:** RO/SRO

**Location
of Testing:** Classroom

**Time
Critical Task:** NO

**Validation
Time:** 25 minutes

**Required Materials
(Tools/Equipment):** Radiological Survey Map #32037, 2-MAB+10-048
OPGP03-ZR-0051, Radiological Access Controls

JOB PERFORMANCE MEASURE INFORMATION SHEET (con't)

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 2 is at 100% power. A worker will be performing corrective maintenance on a High Energy Line Break Accident (HELBA) Transmitter located in The Letdown Heat Exchanger Valve Room, 10' MAB, Room 048. The transmitter is located near 2-CV-0102, PCV-0135 Inlet Isolation Valve. Based upon the expected job scope and a pre-job survey of Room 048, the ALARA Group has determined the worker's EPD settings will be 30 mrem total dose and 150 mrem/hour dose rate.

INITIATING CUE:

The Unit Supervisor directs you to determine:

- 1) the worker's MAXIMUM stay time to the point of receiving an EPD dose alarm AND
- 2) the entry requirements for the room based on **dose rates** (assuming an individual is GET II qualified).

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Maximum Stay Time is less than 100 minutes.

Entry Requirements for a High Radiation Area must be met (as detailed in JPM Step 2).

HANDOUTS:

Survey Map #32037, 2-MAB+010-048, for Pre-Job Survey for upcoming work on HELBA Transmitter.

Copy of OPGP03-ZR-0051, Radiological Access Controls.

NOTES:

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

JPM START TIME _____

SAT/UNSAT Performance Step: 1(C)

Determines worker's maximum stay time to the point of receiving an EPD dose alarm.

Standard:

Maximum stay time is less than 100 minutes.

Comment:

Note that if the worker is allowed to receive the 30 mrem dose the EPD will alarm.
Given the dose rate near the Transmitter is 18 mrem/hour, the worker would receive a total of 30 mrem in 100 minutes.

Cue:

Provide the applicant with the Survey Map handout and the Student Handout copy of 0PGP03-ZR-0051, Radiological Access Controls.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (con't)

SAT/UNSAT Performance Step: 2(C)

Determines entry requirements for a High Radiation Area (HRA).

Standard:

Words to the effect of:

Access Control for HRA:

- *RWP allows entry into a HRA*
- *Worker has TLD*
- *Worker has EPD*
- *Worker is knowledgeable of radiological conditions*
- *Worker is aware of any additional Radiation Protection controls established by the RWP or RP instructions.*

Comment:

Note that the access control requirements for entry into a HRA are provided in 0PGP03-ZR-0051, Radiological Access Controls, Step 6.7.

Also, Contamination clothing requirements will be as specified in the RWP and are a minimum of one full set of PCs for entry into a Contaminated Area (CA) – NOT Required for this JPM.

Cue:

Notes:

- TERMINATE THE JPM -

JPM STOP TIME _____

VERIFICATION OF COMPLETION

Job Performance Measure: **CALCULATE MAXIMUM STAY TIME**

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature _____

Date _____

JPM - HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Unit 2 is at 100% power. A worker will be performing corrective maintenance on a High Energy Line Break Accident (HELBA) Transmitter located in The Letdown Heat Exchanger Valve Room, 10' MAB, Room 048. The transmitter is located near 2-CV-0102, PCV-0135 Inlet Isolation Valve. Based upon the expected job scope and a pre-job survey of Room 048, the ALARA Group has determined the worker's EPD settings will be 30 mrem total dose and 150 mrem/hour dose rate.

INITIATING CUE:

The Unit Supervisor directs you to determine:

- 1) the worker's MAXIMUM stay time to the point of receiving an EPD dose alarm AND
- 2) the entry requirements for the room based on **dose rates** (assuming an individual is GET II qualified).

STI 32132748

OPGP03-ZR-0051**REV. 22**

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Radiological Access Controls

Quality

Non-Safety-Related

Usage: **Available**

Effective Date: 03/20/2007

T Simmons

R Aguilera

D Hubenak

Generation Support

PREPARER

TECHNICAL

USER

COGNIZANT DEPT.

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Radiological Access Controls**1.0 Purpose and Scope**

- 1.1 This procedure describes the program and methods used to control access and work within the Restricted and Radiologically Controlled Areas to maintain exposures to radiation and radioactive materials ALARA.
- 1.2 Specific areas covered in this procedure include:
- Radiological access controls for the Restricted Area and Radiologically Controlled Areas (RCAs)
 - Radiological Postings
 - General guidelines for work in the RCA
 - Radiation Work Permits
 - Radiography Activities
- 1.3 Portions of this procedure may be performed independently of each other.

Radiological Access Controls**2.0** References

- 2.1 Code of Federal Regulations Title 10, Part 19 and 20.
- 2.2 INPO 05-008, Guidelines for Radiological Protection at Nuclear Power Stations
- 2.3 SOER 01-01, Unplanned Radiation Exposures
- 2.4 SOER 85-03, Excessive Radiation Exposures
- 2.5 HPPOS -021
- 2.6 CR 01-16414
- 2.7 Updated Final Safety Analysis Report, Section 12.1, Ensuring That Occupational Radiation Exposures Are As Low As Is Reasonably Achievable.
- 2.8 STP Technical Specifications
- 2.9 Radiography Operating and Emergency Procedure, ROEP-4.0, Instructions for Posting and Restricting Radiographic Areas.
- 2.10 Radiography Operating and Emergency Procedure, ROEP-3.0, Physical Radiation Survey.
- 2.11 ANSI N18.1, Selection and Training of Nuclear Power Plant Personnel
- 2.12 0PGP03-ZR-0044, Contamination Control Program
- 2.13 0PGP03-ZR-0048, Personnel Dosimetry Program
- 2.14 0PRP01-ZR-0005, Access Control Point Management
- 2.15 0PRP07-ZR-0010, Radiation Work Permits
- 2.16 0PGP09-ZA-0001, Plant Access Authorization Program

Radiological Access Controls3.0 DefinitionsNOTE

An area is NOT considered accessible IF tools or other equipment are needed to gain access to an area. Examples of areas NOT considered accessible to individuals include: cubicles with shield plugs installed, tanks with the man-way cover installed or a temporary ladder is needed to access areas. Physically gaining access to an area while circumventing station personal safety, security or radiation protection requirements DOES NOT mean an area is accessible. Once an area is made accessible (e.g., a scaffold is built or ladder installed) THEN all required postings AND other applicable radiological controls must be established.

- 3.1 **ACCESSIBLE AREA:** An area that can reasonably be occupied by any portion of the whole body which is defined in 10CFR20.1003, by ordinary means such as walking or climbing without any additional equipment.
- 3.2 **AIRBORNE RADIOACTIVITY AREA:** Airborne radioactivity area means an area in which airborne licensed radioactive materials exist in concentrations greater than one derived air concentration (DAC) or an area where an individual, without respiratory protection, could have an intake of 12 DAC-hours in a week.
- 3.3 **ALARMING DOSIMETER:** An individual radiation monitoring device capable of measuring accumulated dose and/or dose rate with an alarm which can be preset to a specified dose and/or dose rate.
- 3.4 **ANNUAL (ANNUALLY):** Nominally 12 months not to exceed 15 months.
- 3.5 **AUTOMATIC ACCESS CONTROL:** A computerized process whereby entry and exit into the RCA is monitored and controlled. An example of automatic access control is RCA entry and exit using the Access Control System.
- 3.6 **CONTAMINATED AREA (CA):** An area having loose surface contamination equal to or greater than 1000 dpm/100 cm² (100 net counts per minute using a pancake frisker probe) beta-gamma and/or 20 dpm/100 cm² alpha.
- 3.7 **HIGH RADIATION AREA:** An area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 100 mrem in 1 hour at 30 cm (12") from the radiation source or from any surface that the radiation penetrates. (10CFR20.1003)
- 3.8 **LOCKED HIGH RADIATION AREA:** A High Radiation Area, in which radiation levels from radiation sources external to the body are in excess of 1000 mrem/hour at 30 cm (12") but less than 500 Rads in one hour at one meter from the radiation source or from any surface that the radiation penetrates. Such areas **SHALL** be controlled in accordance with Technical Specification 6.12.2.

Radiological Access Controls

- 3.9 **MANUAL ACCESS:** A non-computerized process where Radiation Protection Personnel utilize reports to verify personnel qualifications and logs to record entry and exit dose for RCA access.
- 3.10 **RADIATION AREA:** An area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 5 mrem in 1 hour at 30 cm (12") from the radiation source or from any surface that the radiation penetrates. (10CFR20.1003)
- 3.11 **RADIATION WORK PERMIT (RWP):** Document which describes the radiological conditions and radiation protection controls to be used when performing the activities for which the permit was written.
- 3.12 **RADIOLOGICALLY CONTROLLED AREA (RCA):** Area designated by Radiation Protection to control personnel access and material movement for Radiation Protection purposes.
- 3.13 **READ:** As used in this procedure and supporting procedures, "read" means either read in the conventional sense or to have the provisions of the document presented orally so the content may be understood.
- 3.14 **RESTRICTED AREA:** The area enclosed by the security fence surrounding both units. Other areas may be included in the restricted area if designated by the Radiation Protection Manager and with appropriate access controls for the area in place.
- 3.15 **SELF-READING DOSIMETER (SRD) [ALSO DIRECT READING DOSIMETER (DRD)]:** An easily readable radiation monitoring device for measuring accumulated dose, designed to be worn by an individual.
- 3.16 **UNAUTHORIZED ACCESS:** Entry into an area to which the Radiation Work Permit did not permit access.
- 3.17 **VERY HIGH RADIATION AREA (VHRA):** An area, accessible to individuals, in which radiation levels could result in an individual receiving an absorbed dose in excess of 500 rad in 1 hour at 1 meter (3') from the radiation source or from any surface that the radiation penetrates. (10CFR20.1003)

Radiological Access Controls

3.18 RCA VISITOR: An individual who has not met the requirements for working independently in the Radiologically Controlled Area (RCA). The security status of the individual is not a consideration when determining whether the individual is an RCA visitor. The minimum requirements for working independently in the RCA are:

- Successful completion of Radiation Worker Training or equivalent
- An individual monitoring device (TLD) assigned
- A current whole body count

NOTE

- IF all work activities occur outside the RCA, THEN the occupational dose is anticipated to be less than 100 mrem/yr and hence no radiation monitoring or additional training is required or provided.
- Working Visitors are normally limited to seven days access per quarter.

3.18.1 RCA WORKING VISITOR: An individual whose purpose for entry into the RCA is in conjunction with their occupation. Generally, these individuals have specific tasks to perform. Any radiation exposure received is occupational exposure.

Working Visitors SHALL receive additional informal training, be provided with radiation monitoring, and have information entered into the computer system so that requests pursuant to 10CFR19.13 may be honored.

3.18.2 OTHER VISITOR: An individual whose purpose for entry into the RCA is not in conjunction with their occupation. These individuals are members of the public and any radiation dose received is not occupational.

Radiological Access Controls**4.0** Responsibilities**4.1** Radiation Protection

- 4.1.1 Provide necessary radiological information and guidance for workers to maintain their radiation doses As Low As Reasonably Achievable (ALARA).
- 4.1.2 Monitor radiological aspects of work to ensure good work practices are followed and controls are adequate.

4.2 Job Supervisor/Crew Leader/Planner

- 4.2.1 Vendors requiring access to the RCA SHOULD receive Formal Radiation Worker Training, i.e., GET II. IF Formal Training cannot be achieved, THEN notify RP Management.
- 4.2.2 Ensure that an RWP is in place and that workers are cognizant of the RWP number, the appropriate Work Authorization Number and work location prior to sending workers to access the RCA.

Radiological Access Controls

4.3 Radiation Workers

- 4.3.1 Complete the requisite employee radiation protection training for the area to be accessed.
- 4.3.2 Review and comply with applicable RWPs.
- 4.3.3 Use correct 6 digit Work Authorization Number for each job unless approved to use 4 digit number.
- 4.3.4 Adhere to good radiological work practices and the guidelines established by Radiation Protection.
- 4.3.5 Know current dose and dose rate limits for each job.
- 4.3.6 Exit RCA prior to receiving an EPD dose alarm. IF dose rate alarm is received exit the area and notify RP unless the RWP contains instructions allowing for continuation of work after an alarm condition is received or RP gave prior approval for the alarm condition.
- 4.3.7 Use the appropriate access control system for entering the RCA.
- 4.3.8 Follow stop work orders and instructions given by Radiation Protection personnel.
- 4.3.9 Notify Radiation Protection personnel immediately of any abnormalities or changes which could affect radiological conditions.
- 4.3.10 Using proper radiological work practices in accordance with approved procedures and radiation work control instruction and training (e.g. RWP, verbal instructions from RP).
- 4.3.11 Reviewing radiological surveys and RWPs or obtaining current radiological conditions from Radiation Protection prior to performing work in RCA's.
- 4.3.12 Personnel monitoring for contamination following transport/handling of radioactive materials outside of the Radiologically Controlled Area SHOULD be performed as soon as practicable following the transport/handling or as directed by Radiation Protection.

Radiological Access Controls

4.4 Radiological Escorts

- 4.4.1 Maintain exposures ALARA at all times and SHALL not allow the visitor(s) exposure to exceed the established exposure limit.
- 4.4.2 Ensure the radiological safety of the visitor by ensuring the visitor complies with applicable procedures and does not enter any areas not authorized by the RWP.

NOTE

IF an individual is required to be created in the Peoplesoft system (i.e., receive a TLD), THEN verification of true identity is required. Official photo identification (e.g., driver's license; passport; government identification; state, province, or country issued certificate of birth; etc.) with physical characteristics of the applicant is acceptable documentation. (0PGP09-ZA-0001, Plant Access Authorization Program)

A worker is no longer considered to be a visitor as far as entering the RCA is concerned WHEN they have completed the GET II challenge exam, collected a WBC, TLD and been entered into PADS. When these requirements are complete, the individual will exist in the computer system and can use the automated login system on the appropriate RWP.

Individuals accessing the RCA as a visitor SHOULD NOT be permitted to enter Contaminated Areas, High Radiation Areas, or Airborne Radioactivity Areas without RPM approval.

- 4.4.3 Obtain the Working Visitor RCA Access Form, Form 1, for visitors performing work or Other Visitor RCA Tour Record, Form 2, for visitors performing tours only, and ensure applicable sections are completed.
- 4.4.4 IF visitor has accessed the RCA to perform work in the other Unit, THEN the escort is responsible for obtaining the completed Form 1 of this procedure from the other Unit.
- 4.4.5 Notify Radiation Protection of transfer of visitor custody.
- 4.4.6 Transfer custody of visitor only to another radiation worker qualified individual.
- 4.4.7 RCA Visitors SHALL:
- Follow instructions of their escort and Radiation Protection personnel.
 - Enter only areas for which they are authorized.
 - Be prepared to furnish verification of true identity

5.0 Notes and Precautions

None

Radiological Access Controls**6.0** Procedure**6.1** Radiologically Controlled Area Access RequirementsNOTE

Requirements below are independent of security requirements.

6.1.1 Unescorted RCA Access Requirements:

- Complete Radiation Worker Training (RWT) or equivalent annually
- Wear an individual monitoring device and any other dosimetry as specified on the RWP
- Have a current whole body count, unless authorized by the RPM
- Be assigned and logged on an active RWP, using the appropriate Work Authorization Number and attend any required pre-job meeting and mockup training, as applicable
- Have sufficient dose margin to perform specified work

Radiological Access ControlsNOTE

IF RCA entry is required, THEN Working Visitors SHALL receive additional informal training, be provided with radiation monitoring, and have information entered into the computer system so that requests under 10CFR19.13 may be honored.

6.1.2 Visitors Accessing the RCA

- SHALL complete Form 1 (for Working Visitors) or Form 2 (for Other Visitors), with appropriate approvals.
- Individuals accessing the RCA as a visitor SHOULD be limited to 75 mrem TEDE per year at STPEGS unless additional dose is authorized by the RPM.
- Furnish verification of true identity if requested.
- SHALL be escorted by an individual with unescorted access to the RCA.
- SHALL return any issued TLDs with completed Form 1 to Dosimetry.
- SHOULD obtain a whole body count prior to and after contaminated area access or entry into an Airborne Radioactivity Area (ARA) except for noble gas.
- SHALL be informally trained on the risks associated with exposure to ionizing radiation in accordance with Radiation Protection procedures (for Working Visitors).
- SHALL obtain RPM approval prior to entering the RCA if less than 18 years of age.
- Be provided with Occupational Exposure History upon request IAW 10CFR19.13.

6.1.3 Visitors Requiring High Radiation Area Access, in addition to RCA Access;

- SHOULD receive Formal Radiation Worker Training (Informal Training MAY be substituted at the discretion of the Radiation Protection Manager)
- SHALL obtain and wear a TLD in accordance with Reference 2.13 if high radiation area access is required. (10CFR20.1502)
- WHEN requested, be provided with Occupational Exposure History IAW 10CFR19.13.

Radiological Access Controls

6.2 General Guidelines for Working in the RCA

- 6.2.1 Eating, chewing gum, or use of tobacco products is prohibited while in the RCA. No food products or tobacco products are allowed in the RCA.
- 6.2.2 Drinking or medically required food products are permitted only under controls specified by Radiation Protection and approval of the RPM.
- 6.2.3 RWP instructions, RP instructions, radiological postings and barriers, and other warning devices SHALL be adhered to at all times.
- 6.2.4 Access to overhead areas in the RCA is prohibited unless approved by Radiation Protection.
- 6.2.5 Generation of waste SHOULD be minimized e.g., packing materials SHOULD be discarded prior to entry into the RCA.
- 6.2.6 Used protective clothing and waste SHALL be placed in designated receptacles.
- 6.2.7 IMMEDIATELY exit the work area and inform Radiation Protection **OR IF** in direct communication with Radiation Protection, THEN immediately notify Radiation Protection, when any of the following occur:
 - Any indication of an unexpected radiation exposure, e.g., if alarming dosimeter alarms,
 - Any dosimetry device is lost or damaged
 - An area radiation or air monitor is alarming

Radiological Access Controls

6.3 Radiation Work Permits (RWP)

NOTE

Requirements stated in Step 6.3.1 MAY be placed into appropriate steps of individual work packages. The RWP references the work package for this information when this option is chosen.

- 6.3.1 Radiation work permits provide information to the worker on radiological conditions and controls, which are to be used for applicable work and contain the following information:
- Radiological conditions including general area and work area radiation dose rates, contamination levels, and airborne concentrations as applicable. These levels MAY be in a range format e.g., 100-200 or <500 etc.
 - Protective clothing requirements.
 - Special instructions describing specific radiological controls and information for the work.
 - Dosimetry requirements.

NOTE

During emergency conditions (e.g., fire, personal injury) an RP Technician escort MAY be used in lieu of an RWP.

- 6.3.2 An RWP is required for the following:
- Entry/Work in the RCA.
 - While handling/escorting radioactive materials outside the main RCAs with radiation levels of ≥ 5 mrem/hr contact on the package.
- 6.3.3 Work packages, which require a RWP, SHOULD be scheduled through the work control process.
- 6.3.4 Form 3 RWP Request, OR the information outlined, SHOULD be provided to Radiation Protection via the work control process to assist in RWP development.
- 6.3.5 For routine surveillances, inspections, or supervisory monitoring in which radiological conditions pose minimal risk, verbal permission may be granted by Radiation Protection to enter under an existing RWP.

Radiological Access Controls

- 6.3.6 When conditions OR work scope change, Radiation Protection SHALL be notified so the RWP conditions can be re-evaluated AND controls revised if appropriate.

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Radiological Access Controls**6.4 RWP Sign In**

- 6.4.1 For initial entry under a RWP that does NOT require a Pre-Job Meeting OR Mock-Up Training, the individual SHALL:
- 6.4.1.1 READ the RWP.
 - 6.4.1.2 SIGN the RWP Sign In Sheet, Form 5 of 0PRP07-ZR-0010, Radiation Work Permits/Radiological Work ALARA Reviews OR an appropriate electronic documentation process.
- 6.4.2 For initial entry under a RWP requiring a Pre-Job Meeting, the individual SHALL:
- 6.4.2.1 READ the RWP.
 - 6.4.2.2 ATTEND any required pre-job meeting.
 - 6.4.2.3 SIGN the RWP Pre-job Meeting Sheet, Form 1 of 0PRP07-ZR-0010 OR an appropriate electronic documentation process.
- 6.4.3 For initial entry under a RWP requiring Mock-Up Training, the individual SHALL:
- 6.4.3.1 READ the RWP.
 - 6.4.3.2 ATTEND any required pre-job meeting and mockup training AND sign the RWP Mock-Up Training Attendance Sheet, Form 4, of 0PRP07-ZR-0010.

Radiological Access Controls

6.5 RCA Entry

6.5.1 For initial entry into the RCA, the individual SHALL

- read the RWP,
- attend any required pre-job meeting and mockup training,
- sign the RWP Log In / Pre-job Meeting Sheet or applicable electronic sign in process.

NOTE

Personnel responding to an emergency SHOULD obtain a Electronic Personnel Dosimeter (EPD) designated for emergency use prior to entry into the RCA. These personnel MAY be manually entered into the database after the emergency has been resolved.

6.5.2 Individual SHALL then sign into the RCA using the applicable automatic access control system in accordance with Addendum 1.

6.5.3 IF automatic access is unavailable THEN manual access SHALL be performed in accordance with Radiation Protection procedure 0PRP01-ZR-0005, Access Control Point Management.

Radiological Access Controls

6.6 RCA Exit

- 6.6.1 Upon reaching the egress point, obtain Radiation Protection assistance for monitoring material which will be leaving the RCA.
- 6.6.1.1 All materials exiting an RCA SHALL be evaluated for radioactivity. Materials SHALL be either free released or conditionally released and subjected to controls specified by Radiation Protection personnel.
- 6.6.1.2 IF an item being considered for release from the RCA will fit into a tool monitor, THEN that item SHALL be monitored using a tool monitor.

NOTE

Personal items such as flashlights, paperwork, work gloves and radios require monitoring through the tool monitor.

- 6.6.1.3 Workers may, for release of items that have not been in a contaminated area OR does not have inaccessible internal surfaces that may be contaminated, use automated contamination monitoring equipment e.g., a tool monitor.
- 6.6.1.4 Items such as hard hats, safety glasses, security badges, etc. are subject to the same monitoring requirements as personnel, i.e., use of a Personnel Contamination Monitor/Personnel Monitor (PCM/PM).
- 6.6.1.5 Security officer's equipment carried on routine patrol inside the RCA that DO NOT enter contaminated areas are normally exempt from the requirements of Step 6.6.1.2 but are subject to the same monitoring requirements as personnel, i.e., use of a PCM/PM.
- 6.6.1.6 IF while using automated contamination monitoring equipment e.g., a tool monitor, and an alarm is received, THEN immediately contact RP for assistance. DO NOT remove the item from the area. (CR 01-16414)
- 6.6.1.7 DO NOT remove items from the RCA that are painted with magenta paint OR that have Radioactive Material Labels affixed to them. Contact RP for assistance. (CR 01-16414)

Radiological Access Controls

6.6.1.8 IF the item being surveyed for release is a plant component from a contaminated system, OR, IF it is known or suspected that an item was used in a contaminated area, THEN immediately contact RP for assistance.

6.6.2 Perform contamination monitoring of themselves using personnel contamination monitor (PCM & PM7) or monitor as directed by Radiation Protection.

NOTE

Personnel MAY stay logged into the RCA IF certain conditions apply, i.e., RP Technicians assisting workers exiting the RCA Egress area, Operators performing watch in the MEAB, personnel performing Fire Watch rounds, and others as determined by the RPM.

6.6.3 Sign out of the RCA using the applicable automatic access control system in accordance with **Addendum 1**.

6.6.4 IF automatic access is unavailable THEN manual exit SHALL be performed in accordance with 0PRP01-ZR-0005, Access Control Point Management.

Radiological Access Controls**6.7 Access Control for High Radiation Areas (HRA)****6.7.1 Personnel entering high radiation areas SHALL be:**

- 6.7.1.1 Assigned to an RWP that permits entry to, HRA, LHRA or VHRA.
- 6.7.1.2 Assigned an individual monitoring device (TLD). (10CFR20.1502)
- 6.7.1.3 Issued an Electronic Personal Dosimeter (EPD)
- 6.7.1.4 Made knowledgeable of the radiological conditions in the area(s) to be accessed
- 6.7.1.5 Aware of additional Radiation Protection controls established by the RWP or RP instructions

6.8 Access Control for Locked High Radiation Areas (LHRA)

- 6.8.1 LHRAs SHALL be locked or continuously guarded OR enclosed to prevent inadvertent access.
- 6.8.2 Keys to doors OR access points SHALL be controlled in accordance with Technical Specification 6.12.2.
- 6.8.3 The HRA entry requirements of Section 6.7 SHALL be met for personnel entering LHRAs along with continuous RP coverage.

6.9 Access Control for Very High Radiation Areas (VHRA)

- 6.9.1 VHRAs SHALL have all controls prescribed by Sections 6.7 and 6.8 with the following additional constraints:

NOTE

Entries by Radiation Protection personnel into a posted VHRA to perform surveys to remove VHRA postings are exempt from 6.9.3 and 6.9.4 provided the source which created the VHRA has been removed, e.g., fuel transfer tube after refueling and Room 001 after thimble insertion is complete. In these cases only RPM approval is required for entry.

- 6.9.2 RWPs allowing entry into VHRAs SHALL specify that individuals entering the VHRA are Radiation Protection personnel OR provided with continuous RP coverage providing positive exposure control.
- 6.9.3 A pre-job ALARA evaluation approved by the ALARA Review Committee SHALL be performed prior to personnel entry into a very high radiation area except for declared emergencies and life saving actions.
- 6.9.4 The RPM AND the Plant Manager SHALL authorize entries into VHRAs.

Radiological Access Controls

6.10 Radiography Activities

NOTE

This section DOES NOT apply to activities in the permanent radiography vault, building 16.

- 6.10.1 Notify Radiation Protection of the intention to conduct radiography at least 24 hours prior to radiography in the Owner Controlled Area.
- 6.10.2 Notify the Operations Shift Supervisor and Radiation Protection before any radiography is performed inside the Owner Controlled Area.
- 6.10.3 Notify Radiation Protection AND the Security Force Supervisor prior to transporting any radiography sources into the Protected Area.
- 6.10.4 Conduct all radiography inside the Owner Controlled Area in accordance with OPRP07-ZR-0009, Performance of High Exposure Work.
- 6.10.5 RWPs are required when performing radiography inside the RCA only.
- 6.10.6 Report to the affected unit Radiation Protection office to sign on the appropriate Radiation Work Permit prior to conducting radiography inside the RCA.

Radiological Access Controls

6.10.7 Provide the following types of information when requested by Radiation Protection:

- Schedule of work to be performed.
- Types of radiation producing equipment and source strength to be used.
- Expected area radiation levels and duration of exposures.
- Radiation area access control methodology.
- Source storage location and security precautions.
- Radiographer training and qualification records.
- Any anticipated difficulties or abnormalities which may justify Radiation Protection support or assistance.

CAUTION

IF the radiography source is electronic (e.g., x-ray machine, etc.), THEN use only survey instruments which operate in current mode (e.g., Eberline RO series ion chambers) and use pencil dosimeters (ion chambers) in lieu of or in addition to direct reading dosimeters for personnel monitoring.

6.10.8 Notify the Radiation Protection Manager (RPM) and facility management if any of the following conditions occur:

- Suspected or potential overexposure to monitored or unmonitored personnel.
- Failure of workers in the area to follow instructions on radiological postings, barriers, warning signs or radiography boundaries
- Damaged equipment, which results, or may result, in a radiation or contamination hazard
- Misplaced or lost source material

6.10.9 Radiation Protection Manager approval is required prior to correcting any condition due to source becoming stuck.

6.10.10 Report any estimated doses to Radiation Protection (for work performed outside the restricted area) for entry into individual exposure files.

6.10.11 DO NOT forward ROEP-3.0-A to the Dosimetry Supervisor IF work was performed under a RWP. Estimated doses were assigned under the RWP Program.

Radiological Access Controls**7.0 Support Documents**

- 7.1 Form 1, Working Visitor RCA Access Form
- 7.2 Form 2, Other Visitor RCA Tour Record
- 7.3 Form 3, RWP Request
- 7.4 Addendum 1, RCA Entry/Exit

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Form 1

Working Visitor RCA Access Form (Typical)

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VISITOR INFORMATION

Name: _____ SSN/Passport: _____ Birth Date: _____
 Street: _____ City: _____ State/Zip: _____ Company _____

Is a Contaminated Area (CA) entry required? ☐ NO ☐ YES
 Is an Airborne Radioactivity Area (ARA) entry required? ☐ NO ☐ YES
 Is a High Radiation Area (HRA) entry required? ☐ NO ☐ YES

If any of the above is yes, then a TLD must be issued to the visitor and a Whole Body Count performed prior to entering the RCA

Approved By: _____ Date: _____

RPM (N/A if answer to all questions is NO)

Access Authorized by: _____ Date _____ Cost Center _____

STPNOC Department Manager

RMS
LABEL

***IF entry is into the RCB at power, ENSURE NEUTRON EPD is issued**

Escort Name	Escort Oracle #	Escort RWP Number	Visitor EPD Serial Number	Entry Date/Time	Exit Date/Time	Visitor Dose For Entry*	Visitor Remaining Margin

Visitor Dose Information (Not Required if a TLD is issued)

To the best of my knowledge:

I certify that my current **annual** dose is _____ mrem **Lifetime** dose is: _____ mrem

Exposure Limit: 75 mrem

Recent medical radiopharmaceutical procedures (such as cardiac stress testing) may interfere with radiological monitoring at STP

I _____ **have** or _____ **have not** (initial one) had medical radiopharmaceutical procedure in the past 45 days.

Visitor Informal Training

Prior to informal training, if the visitor is entering a CA, ARA, or HRA, verify visitor is wearing a TLD

I have attended informal training concerning risks involved in exposure to ionizing radiation.
 I have been given an opportunity to read Regulatory Guide 8.13, (if applicable) and Regulatory Guide 8.29.
 I have had an opportunity to ask questions and have had my questions satisfactorily answered.
 I have read and understand the applicable Radiation Work Permits.

Visitor Signature and Date

Reminders: Are all approvals signed? Are all entries legible? Is all dose information complete? Does the visitor have a TLD?

RP Supervisor /Designee/ Date (Print and Sign)

FORWARD COMPLETED FORM TO DOSIMETRY

This form, when completed, SHALL be retained in accordance with the Document Type List (DTL).

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Form 2

Other Visitor RCA Tour Record (Typical)

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Name: _____

Date of Birth: _____

SSN: _____

Location Visited: _____

STPNOC Manager Approval: _____

Exposure Limit: 75 mrem

Dates of Previous Visits This Year _____

Visitors under 18 years of age requires RPM approval
Entry into ARA (NG) requires RPM approval

* IF ENTRY IS INTO THE RCB AT
POWER, THEN MULTIPLY EPD
READING BY 4 OR ENSURE
NEUTRON EPD IS WORN.

Escort Name	Escort Oracle #	Escort RWP Number	Visitor EPD Serial Number	Entry Date/Time	Exit Date/Time	Dose For Entry *	Visitor Remaining Margin
1.			0000				
2.			0000				

Escort Responsibilities

- Return completed paper work to Radiation Protection.
- Ensure the radiological safety of visitors being escorted.
- Ensure that escorted visitors have read and understood the informal briefing provided on this sheet.
- Ensure that all questions regarding radiological health and safety are satisfactorily answered.
- Contact Radiation Protection for assistance while in the radiologically controlled area, if necessary.
- Escort visitor out of the radiologically controlled area **SHOULD** an emergency occur.
- Contact Radiation Protection prior to transfer of escort responsibilities.
- DO NOT** allow visitor to enter Contaminated Areas, High Radiation Areas, or Airborne Radioactivity Areas without RPM approval.

Information Regarding Radiation Exposures

The average annual exposure for persons in the United States from background radiation is approximately 360 millirem. During your visit to the South Texas Project, you will be limited to less than 75 millirem and your expected radiation exposure is less than a few millirem. Therefore, the radiation exposure you will receive at STP is a small fraction of your annual background radiation exposure. While not all scientists agree on the risk of low levels of radiation exposure, all agree that radiation exposures of a few millirems carry very small, if any, risk. Additional information on radiation risk can be found in Nuclear Regulatory Commission publications Regulatory Guide 8.13 and 8.29. Copies of these documents are available from Radiation Protection.

While in the radiologically controlled area of STP, you are expected to listen closely and follow all directions provided by your escort. Escorts have been trained on how to minimize their exposure to radiation. They will ensure that your exposure to radiation is kept as low as reasonably achievable (ALARA).

Should you have any questions regarding your tour in the radiologically control area, please ask your escort or any person in the Radiation Protection group.

I have or have not (initial one) had medical radiopharmaceutical procedure in the past 45 days.

I have been briefed on the hazards of radiation and have had the opportunity to ask questions.

1. _____
Escort Signature Date

2. _____
Escort Signature Date

Visitor Signature
Or Guardian if under 18 years of age

Date

This record, when completed, SHALL be retained in accordance with the Document Type List (DTL).

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Form 3	RWP Request (Sample)		Page 1 of 1

This form should be provided to Radiation Protection when requesting an RWP, IF electronic system is not available.

Scheduled Start Date/Time		Anticipated completion Date/Time		Priority Class
Work Activity Number:			Work Request Number (if applicable):	
Unit:	Building:	Elevation:	Room Number(s):	
TPNS/System Code(s) (e.g. RC Reactor Coolant):				
Total person-hours (including QA, Firewatch, etc) for the portion of the task to be performed in the RCA			Supervisor/Set-up Time	Wrench Time
Supervisor:		Forman:	Craft(s)	
Extension:		Extension:		
Description of work to be performed. (Reference any applicable work or surveillance procedures.)				
Any additional work instructions that may be needed.				

Submitted by: _____ date _____

This form, WHEN completed, SHALL be retained with the RWP to which it applies.

	0PGP03-ZR-0051	REV. 22	Page 26 of 26
Radiological Access Controls			
Addendum 1	RCA Entry/Exit		Page 1 of 1

1. RCA Entry Using Electronic Personal Dosimeter (EPD)

- 1.1 Obtain an Electronic Personal Dosimeter (EPD) from rack.
- 1.2 Insert EPD into the READER.
- 1.3 Follow prompts on the computer screen.
- 1.4 The computer will display information such as the ALARM SET POINT and zero the EPD.
- 1.5 Wait until the computer approves access, remove dosimeter, verify EPD is on, and proceed to enter the RCA.
- 1.6 Contact Radiation Protection if computer denies access.

2. RCA Exit Using Electronic Personal Dosimeter (EPD)

- 2.1 Insert Electronic Personal Dosimeter (EPD) into reader.
- 2.2 Follow prompts on the computer screen.
- 2.3 Computer will calculate exposure received and provide dose information.
- 2.4 Wait until the computer approves exit, then remove dosimeter from reader.
- 2.5 Return EPD to storage rack.
- 2.6 Contact Radiation Protection if any problems are encountered.

NRC JPM A4 STUDENT HANDOUT

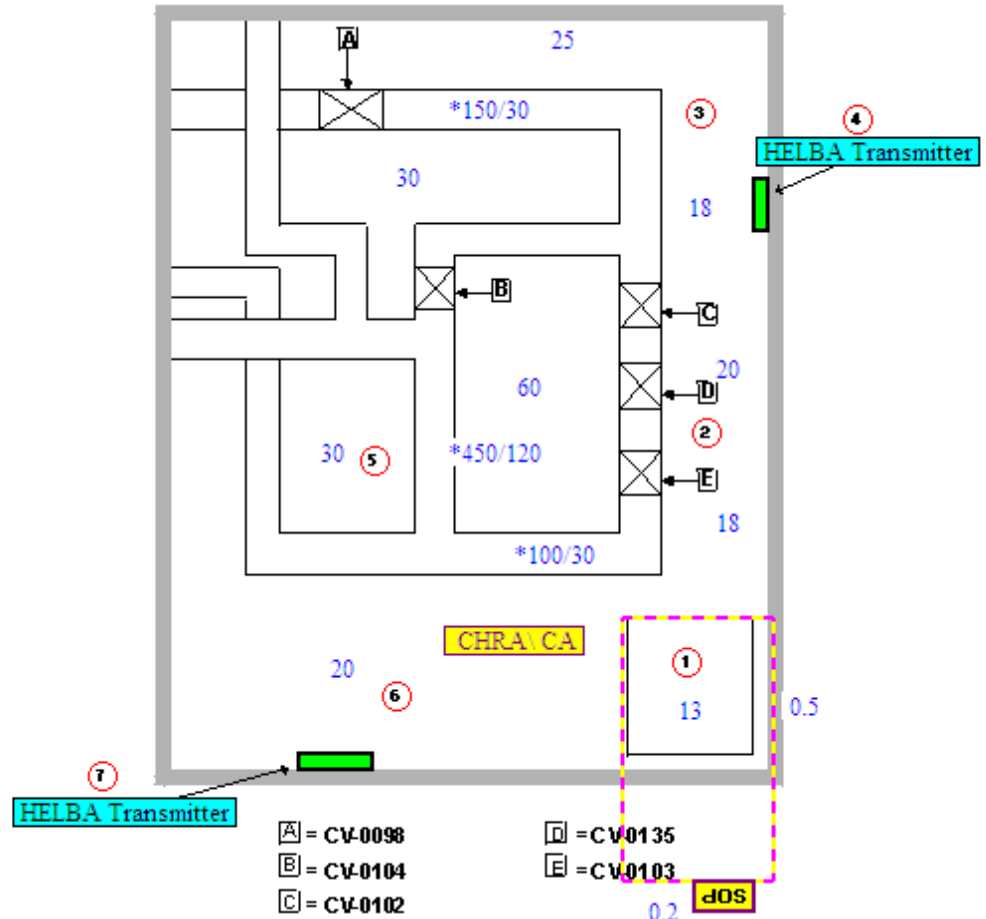
SURVEY #: 32037
 STATUS: APPROVED
 DATE/TIME: 08/02/2007 03:00
 MAP CODE: 2-MAB+010-048
 RWP: 2007-0-0012-0
 WAN: 305903



POWER: 100 %
 PURPOSE: Pre-Job
 ROUTINE: N/A
 TPNS: N/A

Letdown HX Valve Room

HIGHEST CONTAMINATION		
#	dpm/100cm ²	$\beta\gamma$ / α
6	10 K	
5	5 K	
1	4 K	
2	3 K	
3	3 K	
4	1 K	
7	<1 K	



INSTRUMENTS
400-00031-008 400-00097-032

LEGEND
Contact → *120/2.5 ← 30 cm or specified distance <0.2 ← GA or specified distance DOSE RATES - Units are per hr (mrem unless specified)
1 (in circle) SMEAR 1 (in triangle) AIR SAMPLE A (in square) LAW

SURVEY COMMENTS
See back page(s) for all contamination result details. Pre-Job Survey for upcoming work on High Energy Line Accident Transmitters(HELBA). B. Halamicek verified High Rad Postings.

SURVEYOR: Rodriguez, Maria Lourdes

REVIEWER: Sepulveda, Joseph
 DATE/TIME: 08/02/2007 12:36

SURVEY #: 32037
STATUS: APPROVED
DATE/TIME: 08/02/2007 03:00
MAP CODE: 2-MAB+010-048
RWP: 2007-0-0012-0
WAN: 305903



Page 2 of 2
U17

POWER: 100 %
PURPOSE: Pre-Job
ROUTINE: N/A
TPNS: N/A

SMEARS

#	dpm/100cm ² $\beta\gamma$	dpm/100cm ² α	Comments
1	4 K	N/A	floor
2	3 K	N/A	floor
3	3 K	N/A	floor
4	1 K	N/A	Transmitter
5	5 K	N/A	floor
6	10 K	N/A	floor
7	<1 K	N/A	transmitter

POSTING DEFINITIONS

Abbreviation	Definition
CHRA	Caution High Radiation Area
CA	Contaminated Area

SURVEYOR: Rodriguez, Maria Lourdes

REVIEWER: Sepulveda, Joseph

DATE/TIME: 08/02/2007 12:36

SURVEY #: 32037
 STATUS: APPROVED
 DATE/TIME: 08/02/2007 03:00
 MAP CODE: 2-MAB+010-048
 RWP: 2007-0-0012-0
 WAN: 305903

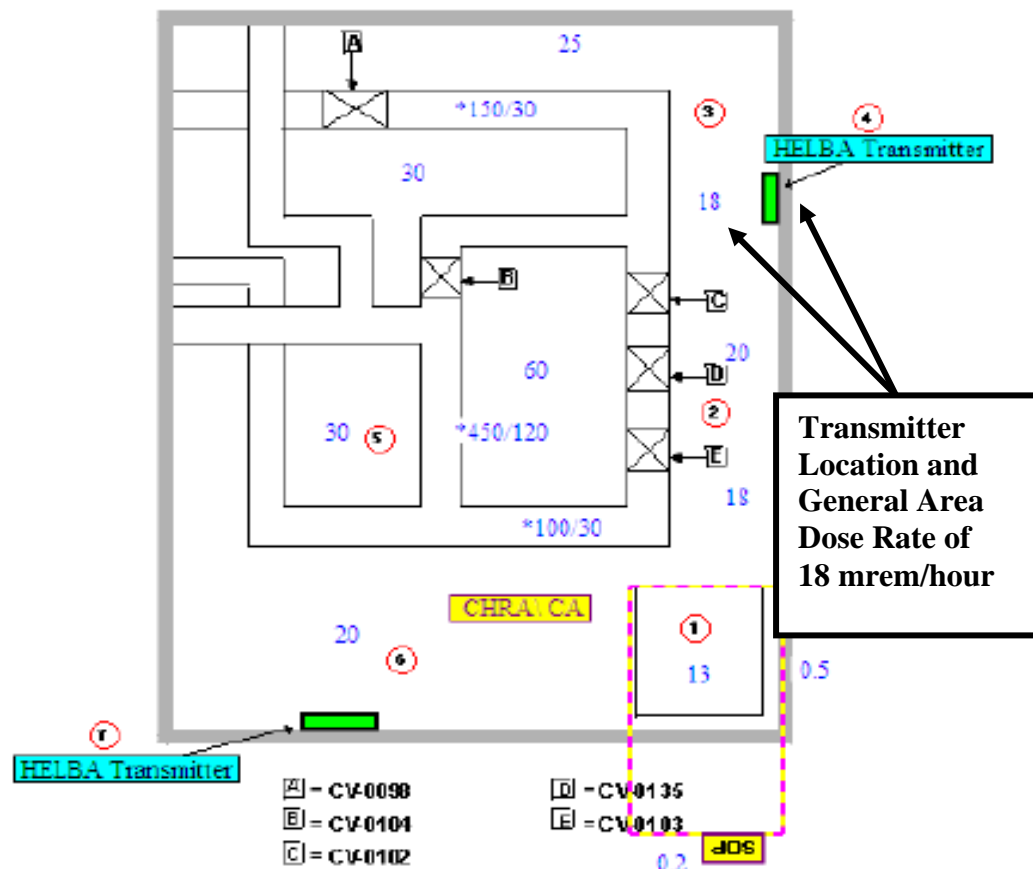


POWER: 100 %
 PURPOSE: Pre-Job
 ROUTINE: N/A
 TPNS: N/A

KEY

Letdown HX Valve Room

HIGHEST CONTAMINATION	
#	dpm/100cm ² βγ / α
6	10 K
5	5 K
1	4 K
2	3 K
3	3 K
4	1 K
7	<1 K



INSTRUMENTS
400-00031-008
400-00097-032

LEGEND
Contact → *120/2.5 ← 30 cm or specified distance <0.2 ← GA or specified distance DOSE RATES - Units are per hr (mrem unless specified)
1 (SMEAR) 1 (AIR SAMPLE) A (LAW)

SURVEY COMMENTS

See back page(s) for all contamination result details.
 Pre-Job Survey for upcoming work on High Energy Lin Accelerator Transmitters(HELBA). B. Halamicek verified High Rad Postings.

KEY

SURVEYOR: Rodriguez,Maria Lourdes

REVIEWER: Sepulveda,Joseph
 DATE/TIME: 08/02/2007 12:36

SURVEY #: 32037
STATUS: APPROVED
DATE/TIME: 08/02/2007 03:00
MAP CODE: 2-MAB+010-048
RWP: 2007-0-0012-0
WAN: 305903



Page 2 of 2
U17

POWER: 100 %
PURPOSE: Pre-Job
ROUTINE: N/A
TPNS: N/A

SMEARS

#	dpm/100cm ² $\beta\gamma$	dpm/100cm ² α	Comments
1	4 K	N/A	floor
2	3 K	N/A	floor
3	3 K	N/A	floor
4	1 K	N/A	Transmitter
5	5 K	N/A	floor
6	10 K	N/A	floor
7	<1 K	N/A	transmitter

POSTING DEFINITIONS

Abbreviation	Definition
CHRA	Caution High Radiation Area
CA	Contaminated Area

KEY

SURVEYOR: Rodriguez, Maria Lourdes

REVIEWER: Sepulveda, Joseph

DATE/TIME: 08/02/2007 12:36

NUCLEAR TRAINING DEPARTMENT
ADMINISTRATIVE JOB PERFORMANCE MEASURE

TITLE: DETERMINE TECH SPEC ACTION FOR ABNORMAL RCS
ACTIVITY

JPM NO.: NRC JPM A5

REVISION: 1

LOCATION: N/A

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: DETERMINE TECH SPEC ACTION FOR ABNORMAL RCS ACTIVITY

JPM No.: NRC JPM A5

Rev. No.: 1

STP Task: 10300, Interpret Technical Specifications

STP Objective: 10300, Given that a condition exists requiring entry into a Technical Specification action statement, interpret Technical Specifications accurately, such that plant activities occur safely and smoothly, and that contacting superiors for advice is unnecessary.

Related K/A Reference: 2.2.22, Knowledge of limiting conditions for operations and safety limits (SRO 4.1)

References: Tech Spec Section 3.4.8, Specific Activity

Task Normally Completed By: SRO

Method of Testing: Actual Performance

Location of Testing: NTF

Time Critical Task: NO

Validation Time: 20 min.

Required Materials (Tools/Equipment):

Calculator
LOT 16 A5 HO

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 1 was at 12% power in preparation for placing the Main Turbine on the line when a Rod Control System failure caused a Reactor Trip. All systems responded as expected during the transient except for HIGH and ALERT alarms received on RT-8039, CVCS Failed Fuel Monitor. The unit is currently in Mode 3 at Normal Operating Pressure and Temperature. As Unit Supervisor, you directed Chemistry to sample the RCS per OPOP04-RA-0001, Radiation Monitoring System Alarm Response. Chemistry reports the following current sample results:

- Gross Radioactivity = 28.2 microcuries/gram
- Dose equivalent Iodine = 235 microcuries/gram
- Last Calculated E-bar = 0.92 Mev/disintegration

INITIATING CUE:

It is now 1100 on the same day. Based on the information provided, determine any applicable Tech Spec actions INCLUDING any applicable time requirements.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Determines that the sampling requirements of Tech Spec Table. 4.4-4 apply (Isotopic Analysis for Iodine every 4 hr.) until the specific activity of the Reactor Coolant System is returned to within limits. No other Tech Spec action applies.

HANDOUTS:

Provide the student with the JPM Handout.

NOTES:

JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Reference Tech Spec Section 3.4.8, Reactor Coolant System Specific Activity

Standard:

References Tech Spec Section 3.4.8, Reactor Coolant System Specific Activity

Comment:

Applicant is to use reference materials provided in the student handout

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2 (C)

Determine if RCS Specific Activity Limits are exceeded

Standard:

Determines RCS Gross Activity is within limits, however Dose Equivalent Iodine is higher than 1 microcurie/gram.

Comment:

The Gross Activity Limit is $< 100/\bar{E}$. For the given information, this works out to be $100/0.92 = 108.69$ microcuries/gram. The actual RCS Gross Activity is 28.2 microcuries/gram and so is within limits.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 3 (C)

Determine Tech Spec Actions and applicable times

Standard:

Determines the Tech Spec action for increased sampling of DE Iodine applies: sample every 4 hours until activity is returned to within its limits.

Comment:

Action a. limits the DE Iodine to either > 1 microcurie/gram for 48 continuous hours OR the limit line of Fig. 3.4-1. For the given information, it has been less than 48 hours so this limit has not yet been reached. For Fig. 3.4-1, since the plant is in Mode 3, the limit on this figure is 275 microcuries/gram. The DE Iodine information given is 235 microcuries/gram thus this limit is not exceeded either.

Because DE Iodine is > 1 microcurie/gram, the increased sample frequency of Tech Spec Table 4.4-4, item 4.a, applies for DE Iodine. This requires sampling every 4 hrs. whenever the specific activity exceeds 1 uc/gm DEI

Cue:

Notes:

- TERMINATE THE JPM -

JPM STOP TIME

VERIFICATION OF COMPLETION

**Job Performance Measure: DETERMINE TECH SPEC ACTION FOR ABNORMAL
RCS ACTIVITY**

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: Sat / Unsat

Evaluator: _____

Signature _____

Date _____

JPM - HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 1 was at 12% power in preparation for placing the Main Turbine on the line when a Rod Control System failure caused a Reactor Trip. All systems responded as expected during the transient except for HIGH and ALERT alarms received on RT-8039, CVCS Failed Fuel Monitor. The unit is currently in Mode 3 at Normal Operating Pressure and Temperature.

As Unit Supervisor, you directed Chemistry to sample the RCS per 0POP04-RA-0001, Radiation Monitoring System Alarm Response. Chemistry reports the following current sample results:

- Gross Radioactivity = 28.2 microcuries/gram
- Dose equivalent Iodine = 235 microcuries/gram
- Last Calculated E-bar = 0.92 Mev/disintegration

INITIATING CUE:

It is now 1100 on the same day. Based on the information provided, determine any applicable Tech Spec actions INCLUDING any applicable time requirements.

NRC JPM A5 STUDENT HANDOUT

DEFINITIONS

CONTAINMENT INTEGRITY

1.7 CONTAINMENT INTEGRITY shall exist when:

- a. All penetrations required to be closed during accident conditions are either:
 - 1) Capable of being closed by an OPERABLE containment automatic isolation valve system, or
 - 2) Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except as provided in Specification 3.6.3.
- b. All equipment hatches are closed and sealed,
- c. Each air lock is in compliance with the requirements of Specification 3.6.1.3,
- d. The containment leakage rates are within the limits of Specification 3.6.1.2, and
- e. The sealing mechanism associated with each penetration (e.g., welds, bellows, or O-rings) is OPERABLE.

CONTROLLED LEAKAGE

1.8 CONTROLLED LEAKAGE shall be that seal water flow supplied to the reactor coolant pump seals.

CORE ALTERATIONS

1.9 CORE ALTERATIONS shall be the movement of any fuel, sources, or reactivity control components [excluding rod cluster control assemblies (RCCAs) locked out in the integrated head package] within the reactor vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.

CORE OPERATING LIMITS REPORT

1.9a The CORE OPERATING LIMITS REPORT is the unit-specific document that provides core operating limits for the current operating reload cycle. These cycle-specific core operating limits shall be determined for each reload cycle in accordance with Specification 6.9.1.6. Plant operation within these core operating limits is addressed within the individual Specifications.

DIGITAL CHANNEL OPERATIONAL TEST

1.10 A DIGITAL CHANNEL OPERATIONAL TEST shall consist of injecting simulated process data where available or exercising the digital computer hardware using data base manipulation to verify OPERABILITY of alarm, interlock, and/or trip functions.

DOSE EQUIVALENT I-131

1.11 DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microCurie/gram) which alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table E-7 of NRC Regulatory Guide 1.109, Revision 1, October 1977.

DEFINITIONS

\bar{E} - AVERAGE DISINTEGRATION ENERGY

1.12 \bar{E} shall be the average (weighted in proportion to the concentration of each radionuclide in the sample) of the sum of the average beta and gamma energies per disintegration (MeV/d) for the isotopes, other than iodines, with half lives greater than 15 minutes, making up at least 95% of the total non-iodine activity in the coolant.

ENGINEERED SAFETY FEATURES RESPONSE TIME

1.13 The ENGINEERED SAFETY FEATURES (ESF) RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF Actuation Setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.

FREQUENCY NOTATION

1.14 The FREQUENCY NOTATION specified for the performance of Surveillance Requirements shall correspond to the intervals defined in Table 1.1.

GASEOUS WASTE PROCESSING SYSTEM

1.15 A GASEOUS WASTE PROCESSING SYSTEM shall be any system designed and installed to reduce radioactive gaseous effluents by collecting Reactor Coolant System offgases from the Reactor Coolant System and providing for delay or holdup for the purpose of reducing the total radioactivity prior to release to the environment.

IDENTIFIED LEAKAGE

1.16 IDENTIFIED LEAKAGE shall be:

- a. Leakage (except CONTROLLED LEAKAGE) into closed systems, such as pump seal or valve packing leaks that are captured and conducted to a sump or collecting tank, or
- b. Leakage into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of Leakage Detection Systems or not to be PRESSURE BOUNDARY LEAKAGE, or
- c. Reactor Coolant System leakage through a steam generator to the Secondary Coolant System.

REACTOR COOLANT SYSTEM

3/4.4.8 SPECIFIC ACTIVITY

LIMITING CONDITION FOR OPERATION

3.4.8 The specific activity of the reactor coolant shall be limited to:

- a. Less than or equal to 1 microCurie per gram DOSE EQUIVALENT I-131, and
- b. Less than or equal to $100/\bar{E}$ microCuries per gram of gross radioactivity.

APPLICABILITY: MODES 1, 2, 3, 4, and 5.

ACTION:

MODES 1, 2 and 3*:

- a. With the specific activity of the reactor coolant greater than 1 microCurie per gram DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval, or exceeding the limit line shown on Figure 3.4-1, be in at least HOT STANDBY with T_{avg} less than 500°F within 6 hours; and
- b. With the gross specific activity of the reactor coolant greater than $100/\bar{E}$ microCuries per gram, be in at least HOT STANDBY with T_{avg} less than 500°F within 6 hours.
- c. Specification 3.0.4.c is applicable.

MODES 1, 2, 3, 4, and 5:

With the specific activity of the reactor coolant greater than 1 microCurie per gram DOSE EQUIVALENT I-131 or greater than $100/\bar{E}$ micro-Curies per gram, perform the sampling and analysis requirements of Item 4.a) of Table 4.4-4 until the specific activity of the reactor coolant is restored to within its limits.

*With T_{avg} greater than or equal to 500°F.

REACTOR COOLANT SYSTEM

SPECIFIC ACTIVITY

SURVEILLANCE REQUIREMENTS

4.4.8 The specific activity of the reactor coolant shall be determined to be within the limits by performance of the sampling and analysis program of Table 4.4-4.

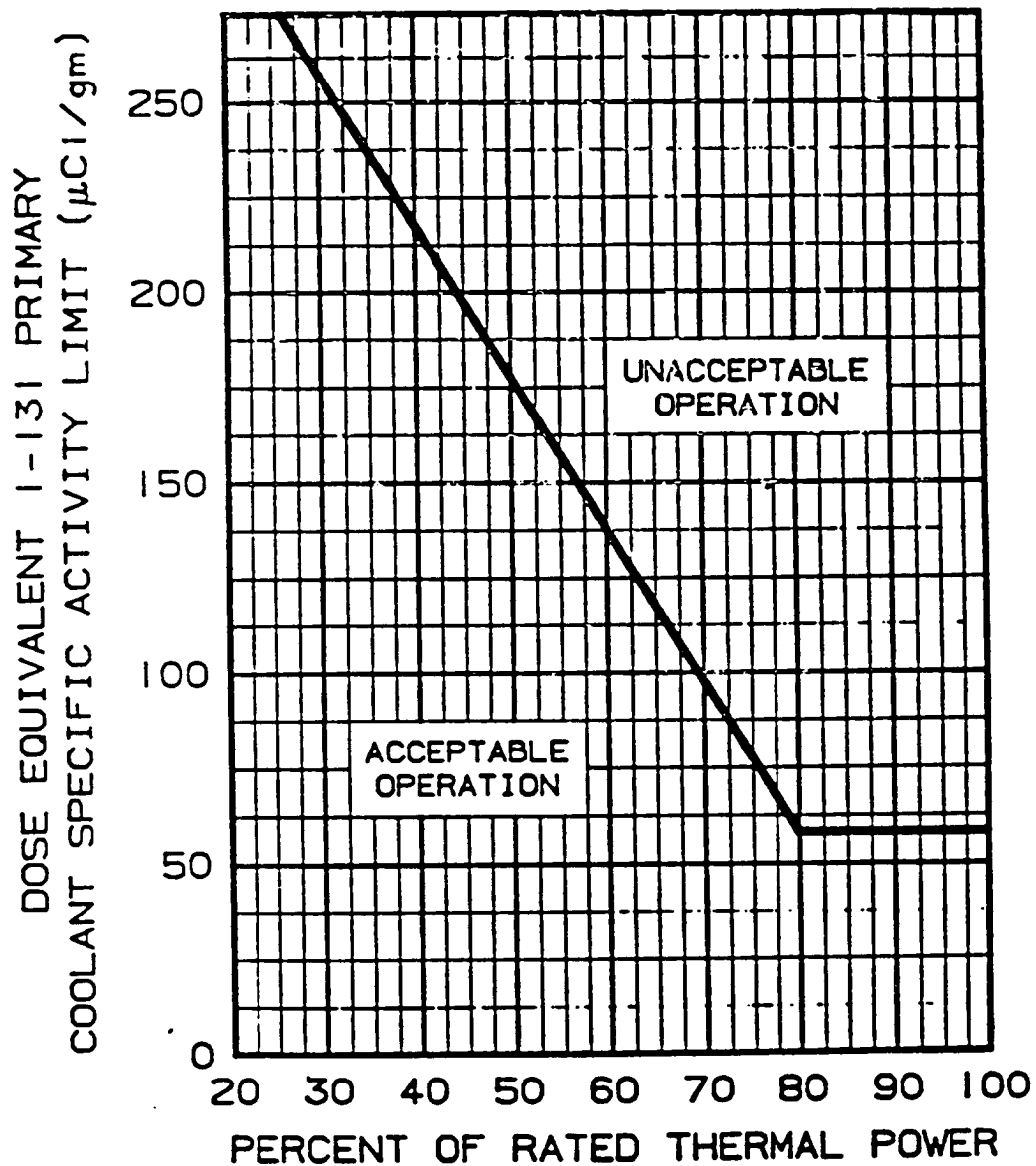


FIGURE 3.4-1.

DOSE EQUIVALENT I-131 REACTOR COOLANT SPECIFIC ACTIVITY LIMIT VERSUS PERCENT OF RATED THERMAL POWER WITH THE REACTOR COOLANT SPECIFIC ACTIVITY $>1 \mu\text{Ci}/\text{gram}$ DOSE EQUIVALENT I-131

REACTOR COOLANT SPECIFIC ACTIVITY SAMPLE AND ANALYSIS PROGRAM

3/4 4-29

TABLE 4.4-4 (Continued)

TABLE NOTATIONS

*A radiochemical analysis for \bar{E} shall consist of the quantitative measurement of the specific activity for each radionuclide, except for radionuclides with half-lives less than 15 minutes and all radioiodines, which is identified in the reactor coolant. The specific activities for these individual radionuclides shall be used in the determination of \bar{E} for the reactor coolant sample. Determination of the contributors to \bar{E} shall be based upon those energy peaks identifiable with a 95% confidence level.

**Sample to be taken after a minimum of 2 EFPD and 20 days of POWER OPERATION have elapsed since reactor was last subcritical for 48 hours or longer.

#Until the specific activity of the Reactor Coolant System is restored within its limits.

KEY

None of these actions apply because neither the DEI nor the RCS Gross Activity is outside the currently applicable limits.

REACTOR COOLANT SYSTEM

3/4.4.8 SPECIFIC ACTIVITY

LIMITING CONDITION FOR OPERATION

3.4.8 The specific activity of the reactor coolant shall be limited to:

- Less than or equal to 1 microCurie per gram DOSE EQUIVALENT I-131, and
- Less than or equal to 100/ \bar{E} microCuries per gram of gross radioactivity.

APPLICABILITY: MODES 1, 2, 3, 4, and 5.

ACTION:

MODES 1, 2 and 3*:

- With the specific activity of the reactor coolant greater than 1 microCurie per gram DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval, or exceeding the limit line shown on Figure 3.4-1, be in at least HOT STANDBY with T_{avg} less than 500°F within 6 hours; and
- With the gross specific activity of the reactor coolant greater than 100/ \bar{E} microCuries per gram, be in at least HOT STANDBY with T_{avg} less than 500°F within 6 hours.
- Specification 3.0.4.c is applicable.

MODES 1, 2, 3, 4, and 5:

With the specific activity of the reactor coolant greater than 1 microCurie per gram DOSE EQUIVALENT I-131 or greater than 100/ \bar{E} micro-Curies per gram, perform the sampling and analysis requirements of Item 4.a) of Table 4.4-4 until the specific activity of the reactor coolant is restored to within its limits.

This action DOES APPLY because the DEI exceeds 1 uCi/gm.

*With T_{avg} greater than or equal to 500°F.

Since the plant is now in Mode 3 (0% power), there is essentially no limit on DEI so no TS entry required for a DEI limit.

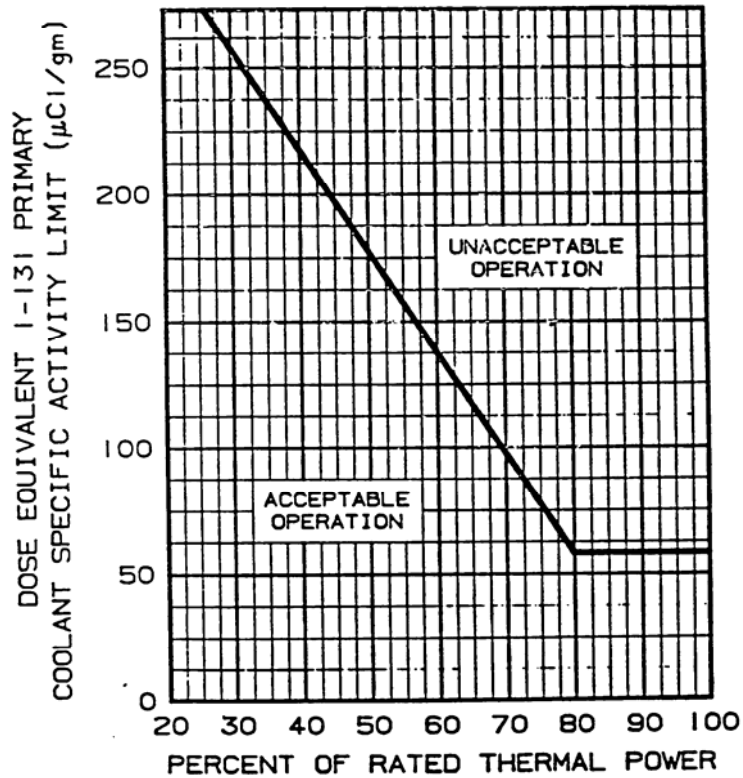


FIGURE 3.4-1

DOSE EQUIVALENT I-131 REACTOR COOLANT SPECIFIC ACTIVITY LIMIT VERSUS PERCENT OF RATED THERMAL POWER WITH THE REACTOR COOLANT SPECIFIC ACTIVITY >1 μCi/gram DOSE EQUIVALENT I-131

KEY

KEY

SOUTH TEXAS - UNITS 1 & 2

3/4-29

TABLE 4.4-4
REACTOR COOLANT SPECIFIC ACTIVITY SAMPLE
AND ANALYSIS PROGRAM

TYPE OF MEASUREMENT AND ANALYSIS	SAMPLE AND ANALYSIS FREQUENCY	MODES IN WHICH SAMPLE AND ANALYSIS REQUIRED
1. Gross Radioactivity Determination	At least once per 72 hours.	1, 2, 3, 4
2. Isotopic Analysis for DOSE EQUIVA- LENT I-131 Concentration	1 per 14 days.	1
3. Radiochemical for E Determination*	1 per 6 months**	1
4. Isotopic Analysis for Iodine Including I-131, I-133, and I-135	a) Once per 4 hours, whenever the specific activity exceeds 1 μCi/gram DOSE EQUIVALENT I-131 or 100/E μCi/gram of gross radioactivity, and b) One sample between 2 and 6 hours following a THERMAL POWER change exceeding 15% of the RATED THERMAL POWER within a 1-hour period.	1#, 2#, 3#, 4#, 5# 1, 2, 3

Item 4.a requires sampling every 4 hrs. as long as DEI is above 1uCi/gm.

KEY

NUCLEAR TRAINING DEPARTMENT
ADMINISTRATIVE JOB PERFORMANCE MEASURE

TITLE: REVIEW CONTROL ROOM LOGS

JPM NO.: NRC A6

REVISION: 1

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: REVIEW CONTROL ROOM LOGS

JPM No.: NRC A6

Rev. No.: 1

STP Task: 30200, Review Operations Logs

STP Objective: 30200, Review Operations Logs IAW 0POP01-ZQ-0022, Plant Operations Shift Routines, to verify that all forms have been completed and any Corrective Action initiated.

**Related
K/A Reference:** 2.1.3 [3.4], Knowledge of Shift Turnover Practices

References: 0POP01-ZQ-0022, Plant Operations Shift Routines
0POP02-CV-0003, Mixing of Boric Acid
Technical Specifications
SPR-940598, Low Boron Concentration, BAT 1A

**Task Normally
Completed By:** SRO

**Method
of Testing:** Simulated

**Location
of Testing:** N/A

**Time
Critical Task:** NO

**Validation
Time:** 40 Minutes

Required Materials (Tools/Equipment):

None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

The plant is in MODE 1, 100% steady state conditions. You are the on-shift Unit Supervisor. The Reactor Operator has completed logs and has given them to you for your review.

INITIATING CUE:

Review the enclosed log package for Shift 1 (0000 – 0200) for accuracy and locate technical and/or procedural errors.

THREE errors have been inserted into the log package, one Critical and two Non-Critical. As a MINIMUM, you are to IDENTIFY the Critical error **AND** ONE non-critical error. Editorial errors such as spelling, grammar, or punctuation are unintentional and DO NOT count.

You are to take the following into account during your review:

- 1) All Radiation Monitor log readings ($\mu\text{Ci/ml}$) are LESS THEN their respective ALERT ALARM.
- 2) All Radiation Monitor log readings (SCFM) are GREATER THAN their respective LOW ALARM LIMIT.
- 3) Carryover errors count as only one error (i.e., a single error that carries over from calculation to calculation or multiple line items with the same incorrect information).

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Correctly locates the critical error which has been inserted into the Control Room Log Package.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

Copy of faulted Control Room Log Package.

NOTES:

- 1) The Control Room log package will consist of a complete set of Modes 1, 2, 3, and 4 Control Room Logsheets. Three errors have been inserted into the Log Package, two of which are non-critical and one of which is critical. The critical error relates to a missed Technical Specification entry condition, and the non-critical errors relate to STP administrative or procedural limit violations. As a minimum, the examinee must locate the Critical error for successful completion of the task.
- 2) The Evaluator is provided with an ANSWER KEY which is appropriately marked ("KEY"). The location of inserted errors is also mentioned in the body of this JPM. The evaluator shall not hand out any page(s) marked as "KEY" to the examinee.

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Review faulted Control Room Log Package.

Standard:

The applicant reviews the faulted Control Room Log Package for errors and/or omissions.

Comment:

While there is no time limit associated with this JPM, the examinee is expected to make reasonable progress during the review process.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2 (C)*

Discuss errors and/or omissions located within the Control Room Logsheet Package.

Standard:

**As a minimum, the examinee correctly locates the critical error inserted in the log package:*

1) Log page 11 of 40

The log taker has incorrectly taken credit for the level in BAT Tank 1A, which is being batched (filled) to a normal level. Because it is in a batching lineup, and it's boric acid concentration is unknown, the tank is inoperable. Therefore the total BAT Volume recorded on the logs should be the amount present in BAT tank 1B ONLY (this figure should be 30,500 gals and not 45,500 gal). Because the amount of boric acid present in BAT 1B is greater than the minimum required in the TRM (27K), this is not a violation of the TRM.

2) Log page 12 of 40

The margin between LOOP DELTA-T TI-0421 and OPDT SET POINT TI-0422B is less than the STP administrative limit required 5%, and is not red circled or noted on the cover page. There are no TS or TRM limits associated with the Loop Delta-T indicators.

3) Log page 13 of 40

*There is greater than a 12 step difference between DRPI and the STEP DEMAND POSITION INDICATION for CONTROL ROD BANK "D". This is a violation of TS 3.1.3.2, requiring DRPI and Step Demand to indicate within 12 steps of each other. ***(Critical Error)****

Comment:

Cue:

Notes:

- TERMINATE THE JPM -

JPM STOP TIME _____

VERIFICATION OF COMPLETION

Job Performance Measure: REVIEW CONTROL ROOM LOGS

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature _____

Date _____

JPM - HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

The plant is in MODE 1, 100% steady state conditions. You the on-shift Unit Supervisor. The Reactor Operator has completed logs and has given them to you for your review.

INITIATING CUE:

Review the enclosed log package for Shift 1 (0000 – 0200) for accuracy and locate technical and/or procedural errors.

THREE errors have been inserted into the log package, one Critical and two Non-Critical. As a MINIMUM, you are to IDENTIFY the Critical error **AND** ONE non-critical error. Editorial errors such as spelling, grammar, or punctuation are unintentional and DO NOT count.

You are to take the following into account during your review:

- 1) All Radiation Monitor log readings ($\mu\text{Ci/ml}$) are LESS THEN their respective ALERT ALARM.
- 2) All Radiation Monitor log readings (SCFM) are GREATER THAN their respective LOW ALARM LIMIT.
- 3) Carryover errors count as only one error (i.e., a single error that carries over from calculation to calculation or multiple line items with the same incorrect information).

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CR

UNIT: 1 DATE: 11/05/2007

0000-0200 SHIFT	1200-1400 SHIFT
Start Time: 0000 Mode: 1 Finish Time: 0200	Start Time: Mode: Finish Time:
(1.) Currently batching acid to Boric Acid Tank 1A. Boric Acid Tank is isolated and not operable.	
Temporary Logs: YES___ NO <input checked="" type="checkbox"/> IF Yes, Number of Temporary Logsheets: <u>N/A</u> START <u>N/A</u> hrs. STOP <u>N/A</u> hrs. (Ref. 6.8.16) Note change to temporary log status in Remarks Section.	Temporary Logs: YES___ NO___ IF Yes, Number of Temporary Logsheets: _____ START _____ hrs. STOP _____ hrs. (Ref. 6.8.16) Note change to temporary log status in Remarks Section.
OPERATOR: <u>Robert Miller</u> (1) SUPERVISOR: _____	OPERATOR: _____ (1) SUPERVISOR: _____
(1) Supervisor signature includes responsibility for second review requirements per 0PGP03-ZE-0004, Plant Surveillance Program.	

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UNIT: 1 DATE: 11/05/2007

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
POWER RANGE NEUTRON FLUX	CP-011	NI-0041	100		2% CHANNEL CHECK (1) (2)	3.3.1 Table 3.3-1 Item 2, Action 2	1,2	(1) IF 1 CHANNEL IS INOP AND THERMAL POWER > 75%, THEN PERFORM 0PSP10-II-0004 EVERY 12 HOURS. IF APPLICABLE, THEN RECORD THE FOLLOWING: * _____ / _____ DATE / TIME OF NEXT CONDITIONAL SURVEILLANCE (2) MAX DIFFERENCE BETWEEN OPERABLE CHANNELS.
		NI-0042	100					
		NI-0043	100					
		NI-0044	100					
A DG FOST	CP-003	LI-9109			N/A	N/A	1,2,3,4	
B DG FOST		LI-9111						
C DG FOST		LI-9113						
RCB DEWPOINT	CP-002	MI-9682	42		N/A °F	N/A	ALL	
RCB PRESSURE	ANNUN WINDOW 2M2-A2	N/A	SAT		NO ALARM OTHERWISE -0.1 TO +0.3 PSIG	3.6.1.4	1,2,3,4	

*“N/A” may **NOT** be written in the space for conditional surveillances until the normal Dayshift log reading is required to be performed. (Reference 6.8.22)

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UNIT: 1 DATE: 11/05/2007

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
RCFC INLET TEMPS	CP-002 (1)	TI-9664	94		°F (2)	N/A	N/A	(1) RECORD ALL INSTRUMENTS. (2) <u>IF</u> RCFC INLET TEMP IS COLDER THAN RCFC OUTLET TEMP BY MORE THAN 5°F ON AN IDLE RCFC FAN OR AN RCFC INLET TEMP IS LESS THAN 50°F ON AN IDLE RCFC, <u>THEN</u> VERIFY OPERABILITY BY VISUAL INSPECTION OF THE BACKDRAFT DAMPER. (Ref. 6.8.7)
		TI-9673	84					
		TI-9661	81					
		TI-9667	91					
		TI-9670	88					
		TI-9676	87					
RCB AVG AIR TEMP	N/A	CALC (1)	SAT		≤ 110°F	3.6.1.5	1,2,3,4	(1) AVG THE FOUR HIGHEST OPERATING INLET TEMPS. ON RUNNING RCFCs. <u>IF</u> THE HIGHEST IS ≤ 110°F, <u>THEN</u> RECORD SAT.
RCFC OUTLET TEMPS	CP-002 (1)	TI-9665	55		≥ 50°F WITH ACCUMS PRESSURIZED (2) (Ref. 6.8.15 and 6.8.19)	N/A	N/A	(1) RECORD ALL INSTRUMENTS. (2) <u>IF</u> < 50°F, <u>THEN</u> VERIFY LOCAL ACCUM METAL TEMP WITH HAND HELD PYROMETER <u>AND</u> DOCUMENT THE TOP AND BOTTOM METAL TEMPS ON A TEMPORARY LOG. (Ref. 6.8.15 and 6.8.19)
		TI-9674	55					
		TI-9662	55					
		TI-9668	55					
		TI-9671	87					
		TI-9677	87					

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UNIT: 1 DATE: 11/05/2007

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
A CCW TEMP	CP-002	TI-4510 (2)	STBY		60-105°F (1)	N/A	N/A	(1) <u>WHEN</u> PERFORMING A PLANT COOLDOWN, <u>THEN</u> CCW TEMP MAY BE INCREASED TO A MAXIMUM OF 120°F FOR A PERIOD OF LESS THAN OR EQUAL TO 4 HOURS. (2) CONTROL BOARD INDICATION IS EXPERIENCING A LACK OF ACCURACY DUE TO QDPS. ALTERNATE LOCAL CCW HEAT EXCHANGER INDICATION MAY BE USED, 1(2)-CC-TISH-4511, -TISH-4516, -TISH-4521 TO VERIFY CCW HEADER TEMP. IS IN THE BAND. (CR # 04-913)
B CCW TEMP		TI-4515 (2)	SEC					
C CCW TEMP		TI-4520 (2)	79					
A ECW TEMP	CP-002	TI-6883	STBY		54-95°F (1) (2)	3.7.5	1,2,3,4	(1) <u>IF</u> < 54°F, <u>THEN</u> OPERATE TRN A, B & C ESS CHILLERS PER COLD WEATHER GUIDELINES IN 0POP02-CH-0005. OR <u>IF</u> ECW SUPPLY TEMP < 41°F, <u>THEN</u> DECLARE ESS CHILLERS INOP. (2) <u>IF</u> ECW SUPPLY TEMP < 75°F <u>AND</u> TEMPERATURE DECREASES BY GREATER THAN OR EQUAL TO 4°F BETWEEN CONSECUTIVE READINGS, <u>THEN</u> START ALL AVAILABLE IDLE ECW PUMPS. (CR 01-19410)
B ECW TEMP		TI-6888	76					
C ECW TEMP	CP-001	TI-6893	76					

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UNIT: 1 DATE: 11/05/2007

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
ACC A DISCH VLV	CP-001	MOV-0039A	SAT		OPEN/ PWR OFF	3.5.1	1,2,3 (1)	(1) MODE 3 WITH PZR PRESS > 1000 PSIG. (2) IF > 92 GAL DIFFERENCE BETWEEN CHANNELS, THEN SUBMIT CR FOR CALIBRATION. (3) INSTRUMENT ERROR REQUIRES OPERABILITY TO BE DETERMINED BY PLANT COMPUTER. (4) MODE 4 WITH RCS TCOLD < 350°F.
					CLOSED	3.4.9.3	4 (4)	
PI-0960		630		N/A	3.5.1 (3)	1,2,3 (1)		
PI-0961		640						
ACC A WTR LEVEL		LI-0950	8975				CHNL CHECK ≤ 92 GAL (2)	
		LI-0951	8980					

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UNIT: 1 DATE: 11/05/2007

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE	
ACC B DISCH VLV	CP-001	MOV-0039B	SAT		OPEN/ PWR OFF	3.5.1	1,2,3 (1)	(1) MODE 3 WITH PZR PRESS > 1000 PSIG. (2) IF > 92 GAL DIFFERENCE BETWEEN CHANNELS, THEN SUBMIT CR FOR CALIBRATION. (3) INSTRUMENT ERROR REQUIRES OPERABILITY TO BE DETERMINED BY PLANT COMPUTER. (4) MODE 4 WITH RCS TCOLD < 350°F.	
					CLOSED	3.4.9.3	4 (4)		
PI-0962		630		N/A					
PI-0963		630							
LI-0952		8900							
ACC B WTR LEVEL			LI-0953	8925		CHNL CHECK ≤ 92 GAL (2)	3.5.1 (3)		1,2,3 (1)

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UNIT: 1 DATE: 11/05/2007

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
ACC C DISCH VLV	CP-001	MOV-0039C	SAT		OPEN/ PWR OFF	3.5.1	1,2,3 (1)	(1) MODE 3 WITH PZR PRESS > 1000 PSIG. (2) IF > 92 GAL DIFFERENCE BETWEEN CHANNELS, <u>THEN</u> SUBMIT CR FOR CALIBRATION. (3) INSTRUMENT ERROR REQUIRES OPERABILITY TO BE DETERMINED BY PLANT COMPUTER. (4) MODE 4 WITH RCS TCOLD < 350°F.
					CLOSED	3.4.9.3	4 (4)	
ACC C N2 PRESSURE		PI-0964	625		N/A	3.5.1 (3)	1,2,3 (1)	
		PI-0965	625					
ACC C WTR LEVEL		LI-0954	8910		CHNL CHECK ≤ 92 GAL (2)			
		LI-0955	8905					

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PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
A RHR FLOW	CP-001	FI-0851	N/A		(1) (3) GPM 1 RHR & 1 RCP OR 2 RHR OR 2 RCPs	3.4.1.3	4 (2)	(1) IF NO OPERATIONS ARE PERMITTED CAUSING DILUTION AND CORE OUTLET TEMP IS ≥ 10 DEG SUBCOOLED THEN ALL RCPs AND RHR PUMPS MAY BE DEENERGIZED FOR 1 HR. NO OPERATIONS ARE PERMITTED THAT WOULD CAUSE INTRODUCTION INTO THE RCS OF COOLANT WITH BORON CONCENTRATION LESS THAN THAT REQUIRED TO MEET SHUTDOWN MARGIN OF LCO 3.1.1, AND CORE OUTLET TEMPERATURE IS MAINTAINED AT LEAST 10°F BELOW SATURATION TEMPERATURE. (2) N/A IN MODES 1, 2, 3. (3) 1 RCP OR RHR PUMP OPERATING AND 1 MORE RCP OR RHR PUMP OPERABLE.
B RHR FLOW		FI-0852	N/A					
C RHR FLOW		FI-0853	N/A					
RHR PUMP IND LIGHTS		A H/S	N/A		POWER AVAIL (1) (3)			
		B H/S	N/A					
		C H/S	N/A					
ECCS VALVE STATUS	CP-001 MOV POSITION IND	0008A	SAT		VALVE SHUT AND POWER OFF	3.5.2	1, 2, 3	
		0019A						
		0008B	SAT					
		0019B						
		0008C	SAT					
		0019C						

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ANNUN WINDOW	ROOM	COMP POINT	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
22M1-D6	CCP A CCP B	HMTD9237 HMTD9238	SAT		≤ 130°F	TRM 3.7.13 (1)	ALL	(1) VERIFY ANNUNC WINDOW CLEAR. IF WINDOW IN ALARM STATE, THEN VERIFY TEMP SAT LOCALLY OR BY COMP POINT. RECORD SAT OR UNSAT IN THE SPACE PROVIDED AND DENOTE ANY ABNORMALITIES IN THE REMARKS SECTION. (2) ≤ 120°F WHEN TESTING PER TECHNICAL SPECIFICATION 4.8.1.1.2.e.7.
22M1-F1	AFWP A AFWP B AFWP C AFWP D	HCTD9744 HCTD9745 HCTD9746 HCTD9747	SAT		≤ 104°F			
22M2-A2	EW TRN A EW TRN B EW TRN C	HZTD9888 HZTD9889 HZTD9890	SAT		≤ 104°F			
22M2-A5	SI PP A SI PP B SI PP C	HFTD9517A HFTD9527A HFTD9537A	SAT		≤ 99°F			
22M2-B1	CCW PP A CCW PP B CCW PP C	HMTD9234 HMTD9235 HMTD9236	SAT		≤ 110°F			
22M2-E2	A DG 35' B DG 35' C DG 35'	HGTD9740 HGTD9741 HGTD9742	SAT		≤ 104°F (2)			
22M2-E3	BA PP A BA PP B	HMTD9333 HMTD9333A	SAT		≤ 99°F			
22M2-F1	RAD MON (H2 ANAL)	HMTD9338	SAT		≤ 99°F			
22M3-A1	A ELEC PEN B ELEC PEN C ELEC PEN	HETD9703 HETD9704 HETD9705	SAT		≤ 100°F			
22M3-B1	ESF SWGR A ESF SWGR B ESF SWGR C	HETD9713 HETD9718 HETD9720	SAT		≤ 82°F			
22M3-B7	RELAY ROOM	HETD9604	SAT		≤ 75°F	TRM 3.7.7 (1)		
	CONTROL ROOM	HETD9605A			≤ 76°F			

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UNIT: 1 DATE: 11/05/2007

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
PRT LEVEL	CP-004	LI-0670	66		65-75%	N/A	ALL	
PRT PRESS		PI-0669	1		< 6 PSIG			
RCDT LEVEL		LI-4901	50		8-92%			
RCDT PRESS		PI-4900	2		< 6 PSIG			
RCDT TEMP		TI-4902	69		< 187°F			
RCB SEC SUMP LEVEL		LI-7811	55		N/A %	N/A	1,2,3	
RCB NORM. SUMP LEVEL		LI-7812	6		N/A GAL	3.4.6.1 3.4.6.2	1,2,3,4	
NORM SUMP DISCHARGE		FQI-7823	8104834					

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UNIT: 1 DATE: 11/05/2007

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
BAT A LVL	CP-004	LI-0103	15,000 (1)		N/A GAL	TRM 3.1.2.6	1,2,3,4	(1) ONLY APPLICABLE IF BAT(S) IS DESIGNATED BORON SOURCE. (2) SUM OF OPERABLE BAT TANKS.
BAT A TEMP.		TI-0104	110 (1)		≥ 65°F (1)			
BAT B TEMP.		TI-0107	95		≥ 65°F (1)			
BAT B LVL		LI-0105	30,500		N/A GAL			
BAT VOLUME	N/A	CALC (2)	45,500		≥ 30,400 GAL (1)			
EXCESS LETDN HX 1(2)A OUTL TEMP	CP-004	TI-0229	71		≤ 110 °F (1)			(1) IF >110 F, THEN CONTACT SYSTEM ENGINEERING FOR AN EVALUATION OF IMPACT ON U1118 AND RCS LEAKAGE.
PRZR VAPOR	CP-004	TI-0607	N/A		N/A	TRM 3.4.9.2	ALL (2)	(1) TI-0607 MINUS TI-0126. (2) ONLY IF AUX SPRAY IN USE.
REGEN HX TEMP		TI-0126	N/A		N/A			
AUX SPRAY DELTA-T		CALC.	N/A		≤ 621°F (1)			
PORV 655A BLOCK VLV		MOV-0001A			OPEN (1)	3.4.9.3 (2)	4 ONLY	(1) IF PORVs USED FOR COLD OVERPRESSURE PROTECTION. (2) IF ALT VENT PATH ESTABLISHED, THEN LOG VENT VERIF SAT PER TECHNICAL SPECIFICATION 4.4.9.3.2.
PORV 656A BLOCK VLV		MOV-0001B						
CHARGING PUMP PRESSURE	CP-004	PI-0204	2700		CHNL CHECK ≤ 200 PSIG BETWEEN PI-0204 AND PI-0288B/287B/286B	3.3.2 Table 3.3-3, Item 3d-2, Action 16	1,2,3,4	(1) COORDINATE THE READING OF RUNNING PUMP(S) DISCHARGE PRESSURE IN THE CONTROL ROOM (PI-0204) WITH THE READING OF THE MEAB WATCH INDICATION PI-0288B/287B/286B) LOCALLY.
	(1)	PI-0288B PI-0287B PI-0286B	2700					

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Operator Logs

Logsheet 1

Modes 1, 2, 3 and 4 Control Room Logsheet

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UNIT: 1 DATE: 11/05/2007

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
RCS TAVG	CP-005	TI-0412A	590.0		≥ 571°F (1) CHNL CHECK 5°F (2)	3.3.2, Table 3.3-3, Item 5f, Action 20 3.1.1.4	1,2,3	(1) IF < 571°F WITH TAVG-TREF DEV ALARM NOT RESET IN MODE 1 OR IN MODE 2 WITH KEFF ≥ 1, THEN COMPLETE LOGSHEET 7. (2) MAX DIFFERENCE BETWEEN OPERABLE CHANNELS.
		TI-0422A	590.0					
		TI-0432A	591.5					
		TI-0442A	591.0					
RCS TAVE DNB PARAMETER	CP-005	CALC (1)	590.625		≤ 595°F	3.2.5	1	(1) AVERAGE OF ALL OPERABLE RCS TAVE CHANNELS (3 MINIMUM).
LOOP DELTA-T	CP-005 OR PLANT COMPUTER (1)	TI-0411	100		≥ 5% BELOW SETPOINT (2)	N/A	1,2 (3)	(1) IF PLANT COMPUTER USED, THEN COMPARE TO PLANT COMPUTER SETPOINT. (2) LOG ACTUAL VALUE. IF LESS THAN 5% BELOW OTDT OR OPDT SETPOINTS, THEN RESTORE MARGIN TO GREATER THAN 5%. (3) N/A IN MODES 3 AND 4. (4) MAX DIFFERENCE BETWEEN OPERABLE CHANNELS DUE TO INSTRUMENT ERROR. LIMIT MAY BE EXCEEDED DUE TO DIFFERENT LOOP OPERATING TEMPERATURES.
		TI-0421	101					
		TI-0431	100					
		TI-0441	101					
OPDT SETPOINT		TI-0412B	107		CHNL CHECK 6% (4)	3.3.1, Table 3.3-1 Items 8,9 Action 6	1,2 (3)	
		TI-0422B	105					
		TI-0432B	108					
		TI-0442B	107					
OTDT SETPOINT		TI-0412C	120		CHNL CHECK 10% (4)			
		TI-0422C	122					
		TI-0432C	122					
		TI-0442C	120					
VESSEL FLANGE L/O TEMP	CP-005	TI-0600	57		N/A °F	3.4.6.2	1,2,3,4	

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UNIT: 1 DATE: 11/05/2007

PARAMETER	INSTRUMENT	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
FOP	N/A (1)	250		N/A			(1) FULL OUT POSITION (FOP) FROM PLANT CURVE BOOK TABLE 1.1.
CONTROL ROD BANK A POSITION INDICATION	GP. 1 DEMAND POS.	250		± 12 STEPS BETWEEN DRPI & DEMAND. ALL RODS IN BANK ABOVE INSERT LIMIT	3.1.3.1 3.1.3.2 3.1.3.6	1,2 (4)	(2) RECORD BANK INSERTION LIMIT FOR PRESENT PWR LEVEL FROM CORE OPERATING LIMITS REPORT.
	GP. 2 DEMAND POS.	250					(3) FULLY WITHDRAWN AS SPECIFIED IN CORE OPERATING LIMITS REPORT.
	DRPI HIGHEST ROD	246					(4) MODE 2 WITH KEFF ≥ 1. N/A IN MODES 3 AND 4.
	DRPI LOWEST ROD	246					
	ROD INS LIMIT (2) (3)	250					
CONTROL ROD BANK B POSITION INDICATION	GP. 1 DEMAND POS.	250					
	GP. 2 DEMAND POS.	250					
	DRPI HIGHEST ROD	246					
	DRPI LOWEST ROD	246					
	ROD INS LIMIT (2)	250					
CONTROL ROD BANK C POSITION INDICATION	GP. 1 DEMAND POS.	250					
	GP. 2 DEMAND POS.	250					
	DRPI HIGHEST ROD	246					
	DRPI LOWEST ROD	246					
	ROD INS LIMIT (2)	250					
CONTROL ROD BANK D POSITION INDICATION	GP. 1 DEMAND POS.	228					
	GP. 2 DEMAND POS.	228					
	DRPI HIGHEST ROD	246					
	DRPI LOWEST ROD	228					
	ROD INS LIMIT (2)	174					

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Operator Logs

Logsheet 1

Modes 1, 2, 3 and 4 Control Room Logsheet

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UNIT: 1 DATE: 11/05/2007

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
SHUTDOWN ROD POS IND.	ALL BANKS	HIGHEST DEMAND POSITION	250		±12 STEPS BETWEEN DRPI POS. & DEMAND POS. VERIFY EACH ROD FULLY WITHDRAWN WHEN CRITICAL USING DRPI. (1)	3.1.3.1 3.1.3.2 3.1.3.5	1,2	(1) FULLY WITHDRAWN AS SPECIFIED IN CORE OPERATING LIMITS REPORT.
		LOWEST DEMAND POSITION	250					
		HIGHEST DRPI	246					
		LOWEST DRPI	246					
EXTENDED RANGE NEUTRON FLUX (S/D MONITOR)	CP-005	NY-0046	N/A		CHNL CHECK CPS (1)	3.3.1, Table 4.3-1, Item 7	3,4 ONLY	(1) IF HIGHEST READING ≥ 1000 CPS, THEN THE MAX DEV IS BY A FACTOR OF 10. IF NOT, MAX DEV. IS BY A FACTOR OF 15. (2) VERIFY NO ERROR MESSAGES WHEN PUSHBUTTON IS DEPRESSED. (Ref. 6.8.4)
		NY-0045	N/A					
		NY-0046 TEST P.B.	N/A		(2)			
		NY-0045 TEST P.B.	N/A					
QPTR ANNUNC WINDOW	CP-005	5M3-A3	SAT		ALARM CLEAR (1)	4.2.4.1.a	1 > 50% PWR	(1) IF ALARM NOT CLEAR, THEN PERFORM 0PSP10-NI-0002 EVERY 12 HRS. IF APPLICABLE, THEN RECORD THE FOLLOWING: * _____ / _____ DATE / TIME OF NEXT CONDITIONAL SURVEILLANCE
		5M3-B3	SAT					

*“N/A” may **NOT** be written in the space for conditional surveillances until the normal Dayshift log reading is required to be performed.
(Reference 6.8.22)

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Operator Logs

Logsheet 1

Modes 1, 2, 3 and 4 Control Room Logsheet

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UNIT: 1 DATE: 11/05/2007

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
AXIAL FLUX DIFFERENCE	CP-005	NI-0041C	-1.5		+5,-10% OF TARGET AFD	3.2.1	MODE 1 > 15% POWER	(1) IF ALARM IS INOP, THEN PERFORM LOGSHEET 4. (2) IF ANY CONTROL BOARD AXIAL FLUX DIFFERENCE INDICATOR IS INOPERABLE, THEN THE “POWER RANGE NEUTRON FLUX” CHART RECORDER BLUE “DELTA V” DIGITAL DISPLAY FOR PEN 3 MAY BE USED TO CALCULATE THE VALUE FOR EACH CHANNEL USING THE EQUATION FOR DELTA-I% IN FIGURE 5.1 OF THE PLANT CURVE BOOK. (CP-018) (Channel I, NR-0041 for NI-0041C) (Channel II, NR-0042 for NI-0042C) (Channel III, NR-0043 for NI-0043C) (Channel IV, NR-0044 for NI-0044C)
		NI-0042C	-1.0					
		NI-0043C	-0.5					
		NI-0044C	-0.5					
	AFD HI ANNUNC WINDOW	5M3-D3	SAT		ALARM OPERABLE (1)			
SOURCE RANGE FLUX	CP-005	NI-0031B	N/A		CPS CHNL CHECK (1)	3.3.1 Table 3.3-1, Item 6 Actions 4,10 Item 5, Action 3	2,3,4 ONLY	(1) ≤ FACTOR OF 3 BETWEEN READINGS.
		NI-0032B	N/A					
INTERMED. RANGE FLUX		NI-0035B	5.0E-4		AMPS CHNL CHECK (1)		1,2 ONLY	
		NI-0036B	4.0E-4					
RCP A IND LIGHTS	CP-005	IND LIGHTS	N/A		POWER AVAIL (1) (2)	3.4.1.2	3,4 ONLY	(1) IF NO OPERATIONS ARE PERMITTED WHICH CAUSE DILUTION AND CORE OUTLET TEMP IS MAINTAINED AT LEAST 10°F SUBCOOLED, THEN ALL RCPs AND RHR PUMPS MAY BE DEENERGIZED FOR UP TO 1 HR. (2) IN MODE 3 AT LEAST 2 RCPs SHALL HAVE POWER. IN MODE 4 AT LEAST 2 OF ANY COMBINATION OF RCPs AND/OR RHR PUMPS SHALL HAVE POWER.
RCP B IND LIGHTS			N/A					
RCP C IND LIGHTS			N/A					
RCP D IND LIGHTS			N/A					

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FEED HDR PRESS	CP-006	PI-0558	1200		N/A PSIG		
STM HDR PRESS	CP-007	PI-0557	1025				
TURB IMP PRESS		PI-0505	770				
		PI-0506	760				
GEN H2 PUR		CP-007 OR PLANT COMPUTER	AI-6057	97.5		≥ 95% (1)	(1) WHEN GENERATOR ON LINE. (2) < 3 PSIG DURING PURGING.
GEN H2 PRESS	PI-6059A OR P6300N		74		72-76 PSIG (1) (2)		
GEN H2 TEMP	CP-007		TI-6050	99		< 115°F	
MAIN BRG OIL PRESS			PI-6232	18.5		≥ 10 PSIG	
LO COOLER OUTL TEMP		TI-6207	116		N/A °F (1)	(1) 110-120°F (GUIDELINE).	

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PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
GEN CURRENT	CP-007	CONTROL BOARD METER	32		≤ 34 KAMPS	N/A	N/A	
GEN MW			1350		N/A MW			
EXC FLD CUR			73		≤ 106 AMPS			
EXC FLD VOLTS			81		N/A VOLTS			
SMUT LEVEL	CP-008	LI-7731A	28		N/A FEET	N/A	N/A	
GS SPILLOVER PRESS		PI-6154	0.9		N/A PSIG			
CL ACW PRESS		PI-6809	100		> 60 PSIG			
OL ACW PRESS		PI-6756	90		> 68 PSIG			
EHC RES.TEMP	PLANT COMPUTER	T6303	125.0		≥ 70°F	N/A	N/A	

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PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
PZR PRESS	QDPS DET DATA P.1	PT455	2240		CHNL CHECK 25 PSIG (1)	3.3.1, Table 3.3-1, Item 10, Action 6 3.3.2, Table 3.3-3, Item 1e, Action 20	1,2,3 ONLY	(1) MAX DIFFERENCE BETWEEN OPERABLE CHANNELS.
		PT456	2242					
		PT457	2237					
		PT458	2237					
PZR PRESSURE DNB PARAMETER	QDPS DET DATA P.1	CALC (1)	2239		>2200 PSIG (2)	3.2.5	1	(1) AVERAGE OF ALL OPERABLE PZR PRESSURE CHANNELS (3 MINIMUM). (2) WHEN PWR RAMP > 5%/MIN OR STEP CHANGE > 10%, <u>THEN</u> N/A FOR MODE 1.
LOOP 1 NARROW RANGE T _{HOT} RTDs	QDPS DET DATA P.2	TE410X	SAT		SAT/UNSAT (1) (2)	3.3.1 Table 3.3-1 Action 6 3.3.2 Table 3.3-3 Item 5f, Action 20 3.3.2 Table 3.3-3 Item 9b, Action 21	1,2,3	(1) <u>IF</u> ANY T _{HOT} CONSISTENTLY DISPLAYS A "P" FOR POOR OR XXXB, <u>THEN</u> IMMEDIATELY NOTIFY THE SHIFT SUPERVISOR. (2) A FAILED RTD THAT IS FLAGGED AS POOR OR SUSPECT WILL NOT BE REMOVED FROM THE QDPS TAS.
		TE410Y						
		TE410Z						
LOOP 2 NARROW RANGE T _{HOT} RTDs		TE420X	SAT					
		TE420Y						
		TE420Z						
LOOP 3 NARROW RANGE T _{HOT} RTDs		TE430X	SAT					
		TE430Y						
		TE430Z						
LOOP 4 NARROW RANGE T _{HOT} RTDs		TE440X	SAT					
		TE440Y						
		TE440Z						

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PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
PZR LEVEL	QDPS DET DATA P.3	LT465	55.2		≤ 86% CHNL CHECK 5% (1)	3.3.1 Table 3.3-1, Item 12, Action 6 3.4.3 3.3.3.6, Table 3.3-10, Item 5, Action 43	1,2,3 ONLY	(1) MAX DIFFERENCE BETWEEN OPERABLE CHANNELS.
		LT466	57.1					
		LT467	57.8					
		LT468	55.5					
RWST LEVEL		LT931	502		≥ 458 IND X 1000 = GAL	TRM 3.1.2.6 3.3.2 Table 3.3-3, Item 7b, Action 19A	1,2,3,4	
		LT932	498		CHNL CHECK 21 IND X 1000 = GAL	3.5.5a 3.3.3.6 Table 3.3-10, Item 9, Action 37		
		LT933	498		(1)			

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PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
EXTENDED RANGE NEUTRON FLUX	QDPS DET DATA P.4	NT 45A	N/A		CHNL CHECK (1)	3.3.1 Table 3.3-1, Item 7, Action 5	3,4 ONLY	(1) IF HIGHEST READING ≥1000 CPS, THEN THE MAX DEVIATION IS BY A FACTOR OF 10. IF NOT, THEN MAX DEVIATION IS BY A FACTOR OF 15.
		NT 46A	N/A					
A SG WTR LEVEL	QDPS DET DATA P.5	LMY-517A	71.5		> 10% (1) CHNL CHECK 5% (3)	3.3.1 Table 3.3-1, Item 14, Action 6	1,2,3,4	(1) MODE 3: MIN OF 2 S/G OPERABLE. (2) MODE 4: IF NO RHR OPERABLE, THEN MIN OF 2 S/G OPERABLE. (3) MAX DIFFERENCE BETWEEN OPERABLE CHANNELS. (4) MODE 1,2,3.
		LMY-518A	71.0					
		LMY-519A	70.7					
		LMY-571A	71.2					
B SG WTR LEVEL		LMY-527A	70.9			3.3.2 Table 3.3-3, Item 5b, Action 20		
		LMY-528A	70.6					
		LMY-529A	70.7					
		LMY-572A	71.0					
C SG WTR LEVEL		LMY-537A	69.8			3.4.1.2 (1) 3.4.1.3 (2) 3.3.3.6, Table 3.3-10, Item 7, Action 43 (4)		
		LMY-538A	68.8					
		LMY-539A	70.8					
		LMY-573A	69.7					
D SG WTR LEVEL		LMY-547A	71.7					
		LMY-548A	70.5					
		LMY-549A	70.7					
		LMY-574A	71.8					

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PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
A STEAM LINE PRESS	QDPS DET DATA P.6	PT514	SAT		CHNL CHECK 40 PSIG (1) (2) (3)	3.3.2, Table 3.3-3, Item 1f, Action 20	1,2,3 ONLY FOR STEAM LINE PRESS	(1) MAX DIFFERENCE BETWEEN OPER CHANNELS. LOG SAT OR UNSAT. IF UNSAT, THEN EXPLAIN REASON IN REMARKS SECTION. (2) IF PT-7411, 7421, 7431 OR 7441 UNSAT, THEN SEE TECHNICAL SPECIFICATIONS 3.3.3.5 AND ALSO 3.3.5.1 FOR OPERABILITY DETERMINATION OF PORVs. (3) TECHNICAL SPECIFICATION 3.3.3.6 for MODES 1, 2, & 3 ONLY.
		PT515						
		PT516						
		PT7411						
B STEAM LINE PRESS		PT524	SAT					
		PT525						
		PT526						
		PT7421						
C STEAM LINE PRESS		PT534	SAT					
		PT535						
		PT536						
		PT7431						
D STEAM LINE PRESS		PT544	SAT					
		PT545						
		PT546						
		PT7441						
PORV PV-7411 PORV PV-7421 PORV PV-7431 PORV PV-7441	QDPS PRI/SEC CP-006		SAT		(1)	3.3.5.1 3.7.1.6	1, 2, 3, 4	(1) TECHNICAL SPECIFICATION 3.7.1.6, 4.3.5.1 IN AUTO and Setpoint 1225 ± 7 psig, MODES 1, 2* PORVs OPERABLE, MODES 1, 2, 3, 4*. * See actual Technical Specification for Exception.

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PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE					
AFW STO TK LEVEL	QDPS DET DATA P.6	LT-7716 (1)	504		≥ 485 IND X 1000 = GAL	3.7.1.3	1,2,3 ONLY	(1) LT-7717 OR LT-7748 MAY BE USED.					
RCB PRESS	QDPS DET DATA P. 7	PT-934	SAT		CHNL CHECK 2 PSIG (1)	3.3.2 Table 3.3-3, Items 1d, 2d, 3c3, 4d, Actions 17, 20, 20A 3.3.3.6 Item 1, Action 43, (2)	1, 2, 3, 4	(1) MAX DIFFERENCE BETWEEN OPER CHANNELS. LOG SAT OR UNSAT. <u>IF</u> UNSAT, <u>THEN</u> EXPLAIN REASON IN REMARKS SECTION. (2) TECHNICAL SPECIFICATION 3.3.3.6 for MODES 1, 2, & 3 ONLY.					
		PT-935											
		PT-936											
		PT-937											
QDPS APC INTERNAL LOCAL CAB. TEMP	QDPS DIAG. P.3	A	77.6		≤ 91°F	TRM 3.7.13, Table 3.7-3, Item 12	ALL						
		B	69.7										
		C	73.6										
		D	68.0										
		RPU N	74.2										
QDPS APC CONTROL CAB. TEMP	QDPS DIAG P.4	A	83.2		≤ 91°F	TRM 3.7.13 Table 3.7-3, Item 12	ALL						
		B	79.8										
		C	78.7										
		D	72.5										
QDPS APC SGWLCS INTERNAL LOCAL CAB. TEMP		A	79.2										
		B	75.9										
		C	75.3										
		D	69.1										

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PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
SG "A" N16 PRIMARY TO SECONDARY LEAK MONITOR	PLANT COMPUTER SYSTEM MENU "S/G DISPLAY LIST" FOR CHNL CHECK	RT-8130B (2)	1.13		< 5 gpd (1)(3)(4)	3.4.6.2	MODE 1 > 25% POWER	(1) IF MONITOR READING IS ≥ 5 GPD, THEN REFER TO 0PGP03-ZO-0041, ACTION FOR MONITORING PRIMARY TO SECONDARY LEAKAGE
SG "B" N16 PRIMARY TO SECONDARY LEAK MONITOR		RT-8131B (2)	1.10		< 5 gpd (1)(3)(4)			(2) THIS MONITOR INDICATES ON THE PLANT COMPUTER AND LOCALLY IN THE COLD CHEM LAB
SG "C" N16 PRIMARY TO SECONDARY LEAK MONITOR		RT-8132B (2)	1.11		< 5 gpd (1)(3)(4)			(3) IF N-16, RT-8027 OR RT-8043 NOT AVAILABLE IN MODES 1 & 2, THEN THE VALUE DETERMINED PER 0PCP09-ZR-0005 MAY BE USED. IF IN MODES 3 & 4, THEN THE VALUE IS DETERMINED PER 0PCP09-ZR-0005
SG "D" N16 PRIMARY TO SECONDARY LEAK MONITOR		RT-8133B (2)	1.16		< 5 gpd (1)(3)(4)			(4) CHNL CHECK. VERIFY NO POINTS ARE IN ALARM AND LEAK RATE IS < 5 GPD. NOTE THAT THIS READING IS NOT REQUIRED BY TECHNICAL SPECIFICATION
RCB SUMPS UNIDENT LEAKAGE	PLANT COMPUTER OR CALC (1)	U7804	-.027		≤ 1.0 GPM (2)(3)			(1) IF PLANT COMPUTER IS OOS, THEN PERFORM LOGSHEET 10. (2) IF > 1.0 GPM, THEN PERFORM 0PSP03-RC-0006, RX COOLANT INVENTORY, TO DETERMINE ACTUAL LEAKAGE AND RECORD RESULTS IN REMARKS SECTION. (3) IF LEAKAGE INCREASES BY ≥ 0.5 GPM IN A 12 HOUR PERIOD, THEN PERFORM 0PSP03-RC-0006, RX COOLANT INVENTORY, TO DETERMINE ACTUAL LEAKAGE. IF LEAKAGE INCREASES TO > 4.7 GPM, THEN DECLARE THE CONTAINMENT SUMP AND FLOW MONITORING SYSTEM INOPERABLE AND APPLY TS 3.4.6.1 ACTION B RECORD RESULTS IN REMARKS SECTION. (CREE 00-1161 AND REG. GUIDE 1.45)

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PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
DATA INPUT TO YC0400	PLANT COMPUTER, CP005, DRPI	RS SYSTEM OR ASSOCIATED DIGITAL POINTS, DRPI, STEP COUNTERS (1)	SAT		± 1 STEP (2)	3.1.3.1 3.1.3.2	1,2	(1) VERIFY PLANT COMPUTER INDIVIDUAL ROD POSITION AGREES WITH MCB DRPI AND VERIFY PLANT COMPUTER STEP COUNTER ROD POSITION AGREES WITH MCB STEP COUNTER POSITION. (2) IF NOT IN AGREEMENT, THEN IMMEDIATELY NOTIFY THE SHIFT SUPERVISOR TO EVALUATE OPERABILITY OF ROD POSITION DEVIATION MONITOR.
ROD DEV/SUPV MON TRBL ANNUNC WINDOW	CP-005	5M3-D5	SAT		ALARM OPERABLE (1)	3.1.3.2	1,2	(1) DETERMINE OPERABILITY BY PLANT COMPUTER POINT YC0400. IF ALARM INOPERABLE, THEN PERFORM LOGSHEET 6.
AXIAL FLUX DIFFERENCE 100% VALUE	PLANT COMPUTER 100% CONSTANTS	(1)	-1.2		(2)	3.2.1	MODE 1 > 15% POWER	(1) REVIEW PLANT COMPUTER POINTS ICNK10031, ICNK10032, ICNK10033, ICNK10034. (2) IF VALUES ARE NOT THE SAME, <u>THEN</u> IMMEDIATELY NOTIFY US/SS.
	PLANT CURVE BOOK	N/A	-1.2		(2)			
TARGET AFD	PLANT COMPUTER	FROM SELECTED COMPUTER POINT U1145,U1146, U1147,U1148	-1.2					
AF PUMP #14(24) DRAIN LINE TEMP	PLANT COMPUTER	T7545 "AFW PMP STM TURBINE DRAIN TEMP"	547.2 SAT		WITHIN 25°F OF Tsat IN D STEAM HDR (1)(2)	N/A	1,2,3,4	(1) IF LIMITS EXCEEDED, THEN DRAIN BLOCKAGE & OVERSPEED POTENTIAL EXISTS. EVALUATE OPERABILITY. (2) CONTACT SED TO PERFORM ULTRASONIC FLOW TESTING AT FO-07537E TO DETERMINE OPERABILITY.

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PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
PRI AIR DT	PLANT COMPUTER OR DIALUP CONNECTION	EMTN0004	-0.62		CHNL CHECK °F (2)	TRM 3.3.3.4, Table 3.3-8		(1) IF ANY OF THE FOLLOWING LIMITS ARE EXCEEDED, THEN ANALYZE TREND OF PREVIOUS READINGS TO ENSURE INSTRs ARE NOT STUCK: (Ref. 6.8.13) NOTE: THESE LIMITS ARE ONLY APPLICABLE FOR WIND SPEEDS > 5 MPH. A) >30 DEG BETWEEN 60M & 10M WIND DIR. B) >30 DEG BETWEEN 10M PRI WIND DIR & 10M BACKUP WIND DIR. C) >10 MPH BETWEEN 10M PRI & 10M BACKUP WIND SPEED. (2) PRI 10M & 60M TEMP 15 MIN AVG'S SHOULD BE COMPARED TO EMTN0004 FOR CHANNEL CHECK. •EMTN0010 PRI 10M TEMP 15 MIN AVG •EMTN0011 PRI 60M TEMP 15 MIN AVG •EMTN0010: 72.45 •EMTN0011: 71.83
PRI 10M SPEED		EMSN0001	2.44		MPH (1)			
PRI 10M DIR		EMXN0002	25.81		DEGREES (1)			
60M SPEED		EMSN0008	1.34		CHNL CHECK MPH			
60M DIR		EMSN0009	31.79		DEGREES (1)			
B/U 10M SPEED		EMXN0012	2.42		MPH (1)			
B/U 10M DIR		EMXN0021	40.04		DEGREES (1)			
PRI ROOM TEMP		EMTN0003	66.07		60°F ≤ TEMP ≤90°F	N/A		
BACKUP ROOM TEMP		EMTN0044	71.33					
AF TEMP C	PLANT COMPUTER	AFTA7523	77.78		≤115°F (1)	N/A	(1) IF LIMIT IS EXCEEDED, THEN REFER TO 0POP04-AF-0001, AUXILIARY FEEDWATER DISCHARGE HEADER HIGH TEMP.	
AF TEMP B		AFTA7524	78.11					
AF TEMP A		AFTA7525	79.16					
AF TEMP D		AFTA7526	84.47					

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PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
RCS FLOW LOOP A	PLANT COMPUTER (5)	RCFE0417	99.1		CHNL CHECK 3% (4) (6)	3.3.1 Table 3.3-1, Item 13, Action 6 3.4.1.1 (1) 3.4.1.2 (2) 3.4.1.3 (3)	1,2,3,4	(1) MODES 1 & 2: ALL RCS LOOPS OPERATING. (2) MODE 3: MIN. 2 RCS LOOPS OPERATING WITH TRIP BREAKERS CLOSED. (3) MODE 4: MIN. 2 RCS OR RHR LOOPS OPERABLE MIN 1 LOOP OPERATING. (4) MODE 1 ONLY: MAX DIFFERENCE BETWEEN OPERABLE CHANNELS. (5) <u>IF</u> PLANT COMPUTER INOP, <u>THEN</u> QDPS <u>OR</u> XMITTER VOLTS CONVERTED TO FLOW MAY BE USED. (6) WHEN THE RCS IS AT LOW PRESSURE AND NO RCP's ARE RUNNING, RCS FLOW MAY INDICATE HIGH FLOW (20-25%). THIS INDICATION IS NORMAL AND IS DUE TO FLOW TRANSMITTER STATIC PRESSURE ZERO EFFECT.
		RCFE0418	98.8					
		RCFE0419	99.3					
RCS FLOW LOOP B		RCFE0427	99.5					
		RCFE0428	99.4					
		RCFE0429	99.9					
RCS FLOW LOOP C		RCFE0437	99.1					
		RCFE0438	99.2					
		RCFE0439	99.3					
RCS FLOW LOOP D		RCFE0447	99.4					
		RCFE0448	98.8					
		RCFE0449	99.2					

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PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
LOOP A, B, C & D AVG RCS FLOW	PLANT COMPUTER OR CALC (2)	RCFU0417D	99.396		(1)	3.2.5	MODE 1 ONLY	<p>(1) IF AVG OF FLOW CHANNELS IS (UNIT 1 ONLY) < 95.4 % OR (UNIT 2 ONLY) < 93.9 %, <u>THEN</u> REFER TO TECHNICAL SPECIFICATION 3.2.5.</p> <p>(2) IF PLANT COMPUTER POINT RCFU0417D IS INOP, <u>THEN</u> THE AVERAGE RCS FLOW IS DETERMINED BY AVERAGING RCS LOOP AVERAGE FLOWS. LOOP AVERAGE FLOWS ARE DETERMINED BY COLLECTING 1 MINUTE (APPROXIMATELY) FLOW VALUES FOR 10 TO 60 MINUTES FROM:</p> <p>A) PLANT COMPUTER POINTS U0400, U0420, U0440 AND U0460, OR</p> <p>B) PLANT COMPUTER POINTS RCFQ0417, RCFQ0427, RCFQ0437, AND RCFQ0447, OR</p> <p>C) MANUAL COLLECTION OF DATA BY OBSERVATION OF LOOP AVERAGE FLOWS ON QDPS DETAIL DATA PAGE 3.</p>
PLANT COMPUTER ALARM PAGE REVIEW	PLANT COMPUTER	N/A	SAT		(1)	N/A	ALL	<p>(1) IF ANY ALARM AFFECTS SYSTEM OPERABILITY, <u>THEN</u> NOTIFY UNIT SUPERVISOR.</p>

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UNIT: 1 DATE: 11/05/2007

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
ACC TK A PRESSURE	PLANT COMPUTER	SIPA0960	624.6		616.3-643.7 PSIG (2)	3.5.1	1, 2, 3 (1)	(1) MODE 3 WITH PZR PRESS > 1000 PSIG. (2) PRESSURE IS MAINTAINED 616.3-643.7 PSIG, TECHNICAL SPECIFICATION LIMIT OF 590-670 PSIG IS ANALYTICAL AND DOES NOT INCLUDE INSTRUMENT ERROR. (3) LEVEL IS MAINTAINED 8822.8-9076.0, TECHNICAL SPECIFICATION LIMIT OF 8800-9100 GAL IS ANALYTICAL AND DOES NOT INCLUDE INSTRUMENT ERROR. (4) LEVEL AFTER LAST SAMPLE OR FILL FROM RWST OBTAINED FROM CONTROL ROOM NARRATIVE LOG (5) RECORD SAT IF LIMIT IS MET IF LEVEL INCREASES ≥ 88 GAL OF THE ABOVE LEVEL (4) AND NOT FROM THE RWST, THEN ENSURE ACCUMULATOR HAS BEEN SAMPLED PER TECHNICAL SPECIFICATION 4.5.1.1.B WITHIN 6 HOURS. IF APPLICABLE, THEN RECORD THE FOLLOWING: * _____ / _____ DATE / TIME OF NEXT CONDITIONAL SURVEILLANCE
		SIPA0961	626.9					
ACC TK B PRESSURE		SIPA0962	624.1					
		SIPA0963	626.3					
ACC TK C PRESSURE		SIPA0964	624.6					
		SIPA0965	627.0					
ACC TK A LEVEL	PLANT COMPUTER	SILA0950	8979.9		8822.8-9076.0 GALS (3)	3.5.1	1, 2, 3 (1)	
			SAT		RECORDED LEVEL LESS THAN 88 GALLONS HIGHER THAN (4) (5)			
		SILA0951	8981.2		8822.8-9076.0 GALS (3)			
			SAT		RECORDED LEVEL LESS THAN 88 GALLONS HIGHER THAN (4) (5)			

*“N/A” may **NOT** be written in the space for conditional surveillances until the normal Dayshift log reading is required to be performed.
(Reference 6.8.22)

This form, when completed, SHALL be retained for a minimum of five years.

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UNIT: 1 DATE: 11/05/2007

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
ACC TK B LEVEL	PLANT COMPUTER	SILA0952	8901.7		8822.8-9076.0 GALS (2)	3.5.1	1, 2, 3 (1)	(1) MODE 3 WITH PZR PRESS > 1000 PSIG.
			SAT		RECORDED LEVEL LESS THAN 88 GALLONS HIGHER THAN (3) (4)			(2) LEVEL IS MAINTAINED 8822.8-9076.0, TECHNICAL SPECIFICATION LIMIT OF 8800-9100 GAL IS ANALYTICAL AND DOES NOT INCLUDE INSTRUMENT ERROR.
		SILA0953	8924.7		8822.8-9076.0 GALS (2)			(3) LEVEL AFTER LAST SAMPLE OR FILL FROM RWST OBTAINED FROM CONTROL ROOM NARRATIVE LOG
			SAT		RECORDED LEVEL LESS THAN 88 GALLONS HIGHER THAN (3) (4)			(4) RECORD SAT IF LIMIT IS MET <u>IF</u> LEVEL INCREASES ≥ 88 GAL OF THE ABOVE LEVEL (3) <u>AND</u> NOT FROM THE RWST, <u>THEN</u> ENSURE ACCUMULATOR HAS BEEN SAMPLED PER TECHNICAL SPECIFICATION 4.5.1.1.B WITHIN 6 HOURS.
								<u>IF</u> APPLICABLE, <u>THEN</u> RECORD THE FOLLOWING: * _____ / _____ DATE / TIME OF NEXT CONDITIONAL SURVEILLANCE

“N/A” may **NOT be written in the space for conditional surveillances until the normal Dayshift log reading is required to be performed.
(Reference 6.8.22)

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UNIT: 1 DATE: 11/05/2007

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
ACC TK C LEVEL	PLANT COMPUTER	SILA0954	9029.5		8822.8-9076.0 GALS (2)	3.5.1	1, 2, 3 (1)	(1) MODE 3 WITH PZR PRESS > 1000 PSIG.
			SAT		RECORDED LEVEL LESS THAN 88 GALLONS HIGHER THAN (3) (4)			(2) LEVEL IS MAINTAINED 8822.8-9076.0, TECHNICAL SPECIFICATION LIMIT OF 8800-9100 GAL IS ANALYTICAL AND DOES NOT INCLUDE INSTRUMENT ERROR.
		SILA0955	9022.7		8822.8-9076.0 GALS (2)			(3) LEVEL AFTER LAST SAMPLE OR FILL FROM RWST OBTAINED FROM CONTROL ROOM NARRATIVE LOG
			SAT		RECORDED LEVEL LESS THAN 88 GALLONS HIGHER THAN (3) (4)			(4) RECORD SAT IF LIMIT IS MET <u>IF</u> LEVEL INCREASES ≥ 88 GAL OF THE ABOVE LEVEL (3) <u>AND</u> NOT FROM THE RWST, <u>THEN</u> ENSURE ACCUMULATOR HAS BEEN SAMPLED PER TECHNICAL SPECIFICATION 4.5.1.1.B WITHIN 6 HOURS <u>IF</u> APPLICABLE, <u>THEN</u> RECORD THE FOLLOWING: * _____ / _____ DATE / TIME OF NEXT CONDITIONAL SURVEILLANCE

*“N/A” may **NOT** be written in the space for conditional surveillances until the normal Dayshift log reading is required to be performed.
(Reference 6.8.22)

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UNIT: 1 DATE: 11/05/2007

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
SGBD LIQUID	RM-11 GRID 2 1043 (2043) TREND	RE-8043	0.00		CHNL CHECK µci/ml (1)	N/A	MODE 1,2,&3 ONLY	(1) SHOULD BE < ALERT ALARM.
COND. VAC PMP GAS	RM-11 GRID 3 1127 (2127) TREND	RE-8027A	7.70E-8		CHNL CHECK µci/ml (1) (4)			(1) SHOULD BE < ALERT ALARM.
SMPL FLOW 1		N/A	9.57E-2		CHNL CHECK SCFM (2) (4)	N/A	N/A	(2) SHOULD BE > LOW ALARM LIMIT. LOW ALARM LIMIT VALUE CAN BE OBTAINED BY GOING TO MONITOR ITEMS.
SMPL FLOW WET			2.28		CHNL CHECK SCFM (3) (4)			(3) NORMALLY INDICATES 0.0 DURING LOW POWER OPERATIONS.
PRIMARY TO SECONDARY LEAKAGE	RM-11 GRID 3 1427 (2427) TREND (4)	RT-8027 (4)	4.8		≤ 150 GPD THROUGH ANY ONE STEAM GENERATOR (3) (5)	4.4.6.2.3	1,2,3,4 (1) (2)	(4) N/A IF CARS SECURED
								(1) NOT REQUIRED TO BE PERFORMED UNTIL 12 HOURS AFTER ESTABLISHMENT OF STEADY STATE OPERATION. <u>IF APPLICABLE, THEN RECORD THE FOLLOWING:</u> * _____ / _____ DATE / TIME OF NEXT CONDITIONAL SURVEILLANCE
								(2) 4.0.4 EXCEPTION APPLIES FOR ENTRY INTO MODES 3 & 4.
								(3) READING OF ≤ 150 GPD INDICATES LIMIT IS MET FOR ALL STEAM GENERATORS.
								(4) THE FOLLOWING MAY ALSO BE USED: • LEAK RATE DETERMINATION PER 0PCP09-ZR-0005 • PLANT COMPUTER POINT RARM8027D • RT-8027 CHANNEL 4 ON CP-023
								(5) ENSURE ACTION TAKEN PER 0PGP03-ZO-0041 IF ≥ 5 GPD.

*"N/A" may **NOT** be written in the space for conditional surveillances until the normal Dayshift log reading is required to be performed(Reference 6.8.22)

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PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
UNIT VENT PART.	RM-11 GRID 3 1110 (2110) MONITOR ITEMS (1)	RE-8010A	3.53E-10		CHNL CHECK µci/ml (2)	OFFSITE DOSE CALC MANUAL (ODCM) 3.3.3.11	ALL	(1) IF RM-11 OOS, THEN USE RM-23. (2) SHOULD BE < ALERT ALARM UNLESS SPECIAL EVOLUTIONS ARE IN PROGRESS. (3) SHOULD BE > LOW ALARM LIMIT. (4) PROCESS FLOW CAN BE COMPARED WITH PLANT COMPUTER POINT HMFA9308. (5) MONITOR PARAMETERS TO VERIFY SAMPLE/PROCESS FLOW IS UPDATING. (6) MONITOR RELEASE RATE IN µci/sec ON 1610 (2610) TO VERIFY RATE CHANNEL INDICATES OPERABLE (GREEN OR LIGHT BLUE) ON GRID 3.
UNIT VENT IODINE		RE-8010A	2.85E-14					
SMPL FLOW 1	RM-11 GRID 3 1110 (2110) TREND (1)	N/A	2.40		CHNL CHECK SCFM (3) (5)			
PROC FLOW N			1.82E+5		CHNL CHECK SCFM (3) (4) (5)			
RELEASE RATE	RM-11 GRID 3 1610 (2610) TREND (1)	N/A	1.34E+1		CHNL CHECK µci/sec (6)			
SMPL FLOW 1	RM-11 GRID 3 1310 (2310) TREND (1)		1.36		CHNL CHECK SCFM (3)			
PROC FLOW N			1.77E+5		CHNL CHECK SCFM (3) (4)			
REACTOR CONT. BLDG. PURGE ISOLATION	RM-23	RI-8012B	1.44E-6		CHNL CHECK µci/ml (2) (4) (6)	3.3.2, Table 3.3-3, Items 3b4, 10d, 11d Actions 18, 28, 30	ALL	(1) IF RM-23 OOS, THEN USE RM-11. (2) < FACTOR OF 3 BETWEEN READINGS. (3) SHOULD BE < ALERT ALARM. (4) SHOULD BE < ALERT ALARM UNLESS PURGE IN PROGRESS OR JUST COMPLETED. (5) WITH FUEL IN SFP. (6) ENSURE FLOW/OPER LAMPS LIT ON RM-23.
		RI-8013B	1.50E-6					
CONTROL RM/AUX BLDG. VENTILATION		RI-8033B	1.27E-6		CHNL CHECK µci/ml (2) (3) (6)		AT ALL TIMES	
		RI-8034B	1.90E-6					
SPENT FUEL POOL EXHAUST		RI-8035B	1.25E-6		CHNL CHECK µci/ml (2) (6)		(5)	
		RI-8036B	1.26E-6					
REACTOR CONT. BLDG. ATMOSPHERE GAS	RM-23 (1)	RI-8011B	6.32E-6		CHNL CHECK µci/ml (3) (6)	3.4.6.1	1,2,3,4	
REACTOR CONT. BLDG. ATMOSPHERE PART.			9.80E-10			3.4.6.2		

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PARAMETER	LOCATION	INSTR	00-06	08-16	LIMIT	MODE	NOTE
COMMUNICATION CHECK	CP-021	ENS PHONE (1)	SAT		SAT	ALL	(1) MAY BE SATISFIED WITH DAILY STATUS CALL FROM NRC.
CALLER IDENTIFICATION AUTHENTICATION CODES	CP-021	ENS PHONE (1)	SAT		NEW CODE RECV'D	ALL	(1) CALLER IDENTIFICATION AUTHENTICATION CODES. (daily code is in effect from 7:00 am until 7:00 am Central Time the next day) <u>M505</u> / <u>V8WW</u> Previous Days Code / Today's Code
ASSEMBLY ALARM	COMMUNICATION CONSOLE (1)	N/A			N/A	ALL	(1) UNIT 1 PERFORM MONDAYS AT 1200. UNIT 2 PERFORM MONDAYS AT 1300.
FIRE ALARM							
SPENT FUEL POOL	LEVEL	LOCAL (1)	66' 5"		≥ 62 FT	1,2,3,4	(1) OBTAIN READING FROM MEAB WATCH. (TECHNICAL SPECIFICATION 4.9.11.1)
RCP BKRS	PUMP A	1F(2F)-11			(1)(2)	3,4	(1) OBTAIN READING FROM TGB WATCH. (TECHNICAL SPECIFICATION 4.4.1.2.1, 4.4.1.3.1) (2) VERIFY AT LEAST 2 BKRS RACKED IN.
	PUMP B	1G(2G)-11					
	PUMP C	1H(2H)-11					
	PUMP D	1J(2J)-11					
ECW POND LEVEL	ECP	LOCAL			25.6 - 26.0 FT (1)	1,2,3,4	(1) OBTAIN READING FROM YARD WATCH. (TECHNICAL SPECIFICATION 3.7.5 MINIMUM LIMIT IS 25.5 FT. FSAR LIMIT IS 25.6-26.0 FT.)

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AMSAC OPERABILITY LOGSHEET

IF turbine impulse pressure is > 224.3 psig, THEN perform the AMSAC operability logsheet during the 1200-1400 logs, otherwise circle N/A and explain in the remarks section.

<p>Determine AMSAC operability by verifying indicated status lights on ZRR-054 (EAB 35' relay room)</p> <p>VERIFY the AMSAC relay panel 118vac neon bulb is lit (ON). Note: look into the bottom of the cabinet (ZRR-054 (EAB 35' relay room)) through the small slot between equipment and wiring to observe that the neon bulb is lit (ON) and therefore power is available to the AMSAC actuation relays. <u>IF</u> the neon bulb is not lit (OFF), <u>THEN</u> contact the system engineer and I&C to verify the neon bulb is functional.</p> <p><u>IF</u> the AMSAC actuation relays do not have available power, <u>THEN</u> AMSAC is inoperable.</p> <p><u>IF</u> any of the following conditions exist, <u>THEN</u> place the AMSAC bypass switch in bypass:</p> <ol style="list-style-type: none"> "STOP" led on upper card cage status panel is ON Any "ALP" led on the test panel is ON "test error" led on the test panel is ON, with any of the following: <ol style="list-style-type: none"> any "ALP" led also ON "SYSTEM ALARM" led is ON <p>AMSAC: SAT / UNSAT / N/A (CIRCLE ONE)</p> <p><u>IF</u> UNSAT OR N/A, <u>THEN</u> EXPLAIN IN THE REMARKS SECTION</p>	<p>(LAMP) (OFF)</p> <p>SYSTEM ALARM</p>	<p>(LAMP) (OFF)</p> <p>CHANNEL/ SYSTEM BYPASS</p>	<p>A1 (LAMP) (FLASHING)</p> <p>A2 (LAMP) (FLASHING)</p> <p>A3 (LAMP) (FLASHING)</p>	
	<p>(LAMP) (OFF)</p> <p>TEST ERROR</p>	<p>(LAMP) (OFF)</p> <p>UART FAILURE</p>	<p>B1 (LAMP) (OFF)</p> <p>B2 (LAMP) (OFF)</p> <p>B3 (LAMP) (OFF)</p>	
	<p>(LAMP) (OFF)</p> <p>MAINT</p>	<p>(LAMP) (ON)</p> <p>NORM</p>	<p>(LAMP) (OFF)</p> <p>TEST</p>	<p>POWER</p> <p>+5V (LAMP) (ON)</p> <p>+12V (LAMP) (ON)</p> <p>-12V (LAMP) (ON)</p> <p>+15V (LAMP) (ON)</p>
	<p>AMSAC RELAY PANEL 118VAC NEON BULB</p> <p>(LAMP) (ON)</p>			
<p>ALP 1 (LAMP OFF)</p> <p>ALP 2 (LAMP OFF)</p> <p>ALP 3 (LAMP OFF)</p> <p>ACTUATION STATUS</p> <p>PERFORM LAMP TEST _____</p>		<p>RUN (LAMP) (ON)</p> <p>STOP (LAMP) (OFF)</p> <p>OVERTEMP (LAMP OFF)</p> <p>ONLINE (LAMP ON)</p> <p>OFFLINE (LAMP OFF)</p>		

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UNIT: 1

DATE: 11/05/2007

DAY: Monday

PARAMETER	LOCATION	INSTR	REQUIRED							SHIFT 2	LIMIT	TECHNICAL SPECIFICATION
			SU	MO	TU	WE	TH	FR	SA			
'A' DG FOST Digital Level Indication	55' DGB OUTSIDE OF SOUTH TANK ROOM DOOR	LI-9109B							X		≥60,500 gal.	3.8.1.1.b
'B' DG FOST Digital Level Indication	55' DGB OUTSIDE OF SOUTH TANK ROOM DOOR	LI-9111B							X		≥60,500 gal.	3.8.1.1.b
'C' DG FOST Digital Level Indication	55' DGB OUTSIDE OF SOUTH TANK ROOM DOOR	LI-9113B							X		≥60,500 gal.	3.8.1.1.b

PROCEDURE	DESCRIPTION	MODE	REQUIRED							PERFORMED			
			SU	MO	TU	WE	TH	FR	SA	SHIFT	DATE	TIME	INIT
0PSP10-NI-0002	QPTR CALC	1 > 50% PWR	X							2			
0PEP02-IB-0001	LOOSE PARTS MONITORING SYSTEM CHANNEL CHECK	1,2	X	X	X	X	X	X	X	2			
0PEP02-IB-0001	LOOSE PARTS MONITORING SYSTEM AUDIO CHECK (ALL CHANNELS)	1,2						X		2			
0PEP02-CU-0001	CALORIMETRIC VERIFICATION	1 >30% PWR		X						2			

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UNIT: 1

DATE: 11/05/2007

DAY: Monday

PERFORM ON THE DAY AND SHIFT DESIGNATED. RECORD DATE/TIME/INIT. IF MODE OR CONDITION DEPENDENT, THEN N/A THE BLOCKS.

PROCEDURE	DESCRIPTION	MODE	REQUIRED							PERFORMED			
			SU	MO	TU	WE	TH	FR	SA	SHIFT	DATE	TIME	INIT
0PSP03-EA-0002	ESF PWR AVAIL	1,2,3,4	X							1	N/A	N/A	N/A
0POP02-DG-0001 (1)	DG CHK VLV	1,2,3,4							X	1	N/A	N/A	N/A(2)
0POP02-DG-0002 (1)	DG CHK VLV	1,2,3,4							X	1	N/A	N/A	N/A(2)
0POP02-DG-0003 (1)	DG CHK VLV	1,2,3,4							X	1	N/A	N/A	N/A(2)
0PSP10-ZG-0003	S/D MARG CALC	3,4	X	X	X	X	X	X	X	1	N/A	N/A	N/A
0PEP02-ZE-0001	TRANSIENT CYCLE COUNTING LOG CHECKLIST (4)	1,2,3,4	X	X	X	X	X	X	X	1	11/05/07	0200	RM
0PSP03-RC-0006 (3)	RCS INVEN	1,2,3,4	X	X	X	X	X	X	X	1	11/05/07	0023	RM

(1) PERFORM 0POP02-DG-0001, (2), (3) SECTION FOR STARTING AIR RECEIVER BLOWDOWN AND PURGE ADJUSTMENT.

(2) OBTAIN RESULTS FROM EAB WATCH.

(3) **NOT** REQUIRED FOR MODE 4 ENTRY, BUT REQUIRED WITHIN 72 HRS. FOLLOWING MODE 4 ENTRY.

(4) TO BE PERFORMED BY SHIFT TECHNICAL ADVISOR OR CONTROL ROOM STAFF.

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UNIT: 1
DATE: 11/05/2007
DAY: Monday

PERFORM ON THE DAY AND SHIFT DESIGNATED. RECORD DATE/TIME/INIT. IF MODE OR CONDITION DEPENDENT, THEN N/A THE BLOCKS.

PROCEDURE	DESCRIPTION	MODE	REQUIRED							PERFORMED			
			SU	MO	TU	WE	TH	FR	SA	SHIFT	DATE	TIME	INIT
MAIN GENERATOR GROUND CHECK	MANUAL GROUND CHECK (CP007) (1) (2)	1 (3)	X	X	X	X	X	X	X	0000	11/05/07	0010	RM
										1200			
QSE RING DOWN LINE COMMUNICATION	QSE RING DOWN LINE COMMUNICATION (4)	1,2,3,4						X		1	N/A	N/A	RM
CONTROL ROOM RADIO BASE STATION CHECK	CONTROL ROOM RADIO BASE STATION CHECK (5)	1,2,3,4	X							1	N/A	N/A	RM

- (1) MANUAL GROUND CHECK MAY ALSO BE PERFORMED LOCALLY IF DESIRED.
- (2) IF A GROUND IS INDICATED, THEN THE SYSTEM ENGINEER SHALL BE NOTIFIED.
- (3) MODE 1 WITH THE MAIN GENERATOR OUTPUT BREAKER CLOSED.
- (4) QSE RING DOWN LINE COMMUNICATIONS CIRCUIT WILL BE TESTED WEEKLY TO ENSURE THE CIRCUIT IS FUNCTIONAL AT ALL QSE LOCATIONS. THE TEST WILL BE CONDUCTED BY ORIGINATING THE CALL FROM EITHER OF THE STP CONTROL ROOMS TO ALL OWNER QSE LOCATIONS. ANY FAILURES WILL BE ADDRESSED IN A TIMELY MANNER AND A RETEST WILL BE PERFORMED UPON CORRECTION OF THE FAILURE. (REFER TO THE OWNERS COMMUNICATION PLAN)
- (5) CONTROL ROOM RADIO BASE STATION WILL BE TESTED WEEKLY TO ENSURE THE STANDBY RADIO BASE STATION IS OPERATING PROPERLY.

PARAMETER	LOCATION	INSTR	REQUIRED							SHIFT 1	LIMIT	TECHNICAL SPECIFICATION
			SU	MO	TU	WE	TH	FR	SA			
ECW TRAIN "A"			X							N/A	(1),(2)	N/A
ECW TRAIN "B"			X							N/A	(1),(2)	N/A
ECW TRAIN "C"			X							N/A	(1),(2)	N/A

- (1) Startup each idle ECW train on a weekly basis and run for a minimum of one hour with chlorination completed during run to maintain adequate sodium hypochlorite treatment. (Should coincide with weekly traveling screen rotation)
- (2) Record SAT for each ECW Train operated during Sodium hypochlorite injection.

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UNIT: 1

DATE: 11/05/2007

DAY: Monday

PROCEDURE	DESCRIPTION	MODE	REQUIRED						
			SU	MO	TU	WE	TH	FR	SA
0PSP03-NI-0001	POWER RANGE NI CHANNEL CAL	1 > 15% RTP	X	X	X	X	X	X	X
INDICATE METHOD USED TO CALIBRATE POWER RANGE NIs (CIRCLE a, b, c <u>OR</u> d) a. DELTA-T POWER (DELTA-T POWER <30%) b. U1118: INDICATE POWER LEVEL (CHECK) ___ 15% <POWER <30% <u>✓</u> POWER ≥ 30% c. MANUAL: CALORIMETRIC DATA ACQUISITION & REDUCTION PER ADDENDUM 2 ___ 15% <POWER <30% ___ POWER ≥ 30% d. RELAY RACK MEASUREMENTS			TARGET DATE TIME INIT						
			11/05/07		0230		RM		
			ACTUAL DATE TIME INIT						
			11/05/07		0250		RM		

TASK SHOULD BE COMPLETED AS CLOSE TO "TARGET" DATE AND TIME AS POSSIBLE.
 TRANSFER "ACTUAL" TIME PERFORMED OF LAST NI CALORIMETRIC TO NEXT DAY'S LOGS AS NEW "TARGET" TIME.

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UNIT: 1 DATE: 11/05/2007 DAY: Monday

IF REQUIRED BY THE BELOW LISTED TECHNICAL SPECIFICATION, THEN PERFORM AT THE FREQUENCIES INDICATED. IF **NOT** REQUIRED OR PERFORMED, THEN N/A THE BLOCKS.

PROCEDURE	DESCRIPTION	MODE	REQUIRED							PERFORMED			
			SU	MO	TU	WE	TH	FR	SA	SHIFT	DATE	TIME	INIT
0PSP10-NI-0002	QPTR CALC	1 > 50% (1)	X	X	X	X	X	X	X	1	N/A	N/A	RM
0PSP10-II-0004	QPTR CALC USING CPDM	1 > 75% (2)	X	X	X	X	X	X	X	1	N/A	N/A	RM
RCB ELEC PENETRATION OVERCURRENT DEVICE LCO	PRI BKR RACKED OUT OR B/U BKR OPEN	1,2,3,4 (5)	X							1	N/A	N/A	RM
0PSP03-EA-0002	ESF PWR AVAIL	1,2,3,4 (3)(6)	X	X	X	X	X	X	X	0000	N/A	N/A	RM
										0600			
0PSP10-ZG-0005	RX SDM CALC	1,2 (4)	X	X	X	X	X	X	X	1	N/A	N/A	RM
0PSP10-ZG-0003		3,4 (4)										N/A	RM

- (1) DURING STEADY STATE OPERATION WHEN ALARM IS INOP. (TECHNICAL SPECIFICATION 4.2.4.1.b)
- (2) WITH ONE POWER RANGE CHANNEL INOP. (TECHNICAL SPECIFICATION 4.2.4.2) (CPDM - Core Power Distribution Measurement)
- (3) WITHIN 1 HOUR AFTER LOSS OF AC POWER SOURCE(S), **OR** WITHIN 1 HOUR AFTER LOSS OF DC POWER SOURCE FOR ASSOCIATED SDG (TECHNICAL SPECIFICATIONS 3.8.2.1, 3.8.3.1), AND EVERY SIX HOURS THEREAFTER STARTING AT 0000 HOURS EACH DAY. (Ref. 6.8.18) (Ref. 6.10.12) (Ref. 6.11.20)
- (4) WITHIN 1 HOUR AFTER DETECTION OF AN INOP CONTROL ROD AND AT LEAST ONCE EVERY 12 HOURS THEREAFTER. (TECHNICAL SPECIFICATION 4.1.1.1.1.a)
- (5) SEE OAS FOR ALL ELECTRICAL PENETRATION OVERCURRENT DEVICES WHICH ARE OOS. (TRM 3.8.4.1.a)
- (6) WHEN REQUIRED AS A RISK MANAGEMENT ACTION (RMA) PER 0POP01-ZO-0006 AND EVERY SIX HOURS THEREAFTER STARTING AT 0000 HOURS EACH DAY UNTIL THE RMA IS NO LONGER REQUIRED (Ref. 6.11.20)

This form, when completed, SHALL be retained for a minimum of five years.

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UNIT: 1 DATE: 11/05/2007 DAY: Monday

IF REQUIRED BY THE LISTED TECHNICAL SPECIFICATION, THEN PERFORM AT THE FREQUENCIES INDICATED. IF **NOT** REQUIRED OR PERFORMED, THEN N/A THE BLOCKS.

PROCEDURE	DESCRIPTION	MODE	REQUIRED							PERFORMED			
			SU	MO	TU	WE	TH	FR	SA	SHIFT	DATE	TIME	INIT
0PSP10-NI-0002	QPTR CALC	1 > 50% (1)	X	X	X	X	X	X	X	2			
0PSP10-II-0004	QPTR CALC USING CPDM	1 > 75% (2)	X	X	X	X	X	X	X	2			
0PSP03-EA-0002	ESF PWR AVAIL	1,2,3,4 (3)(5)	X	X	X	X	X	X	X	1200			
										1800			
0PSP10-ZG-0005	RX SDM CALC	1,2 (4)	X	X	X	X	X	X	X	2			
0PSP10-ZG-0003		3,4 (4)											

- (1) DURING STEADY STATE OPERATION WHEN ALARM IS INOP. (TECHNICAL SPECIFICATION 4.2.4.1.b)
- (2) WITH ONE POWER RANGE CHANNEL INOP. (TECHNICAL SPECIFICATION 4.2.4.2) (CPDM - Core Power Distribution Measurement)
- (3) WITHIN 1 HOUR AFTER LOSS OF AC POWER SOURCE(S), **OR** WITHIN 1 HOUR AFTER LOSS OF DC POWER SOURCE FOR ASSOCIATED SDG (TECHNICAL SPECIFICATIONS 3.8.2.1, 3.8.3.1), AND EVERY SIX HOURS THEREAFTER STARTING AT 0000 HOURS EACH DAY. (Ref. 6.8.18) (Ref. 6.10.12) (Ref. 6.11.20)
- (4) WITHIN 1 HOUR AFTER DETECTION OF AN INOP CONTROL ROD AND AT LEAST ONCE PER 12 HOURS THEREAFTER. (TECHNICAL SPECIFICATION 4.1.1.1.1.a)
- (5) WHEN REQUIRED AS A RISK MANAGEMENT ACTION (RMA) PER 0POP01-ZO-0006 AND EVERY SIX HOURS THEREAFTER STARTING AT 0000 HOURS EACH DAY UNTIL THE RMA IS NO LONGER REQUIRED (Ref. 6.11.20)

This form, when completed, SHALL be retained for a minimum of five years.

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CR

UNIT: 1 DATE: 11/05/2007

0000-0200 SHIFT	1200-1400 SHIFT	General Notes <i>Shaded areas on pages 11 of 40, 12 of 40, and 13 of 40 represent the errors inserted and are indicative of parameters which have exceeded their associated limits.</i> <i>(See JPM Step #2 for a technical explanation of the errors.)</i>
Start Time: 0000 Mode: 1 Finish Time: 0120 1. Currently batching acid to Boric Acid Tank 1A. Boric Acid Tank is isolated and not operable.	Start Time: Mode:	
Temporary Logs: YES___ NO <input checked="" type="checkbox"/> IF Yes, Number of Temporary Logsheets: <u>N/A</u> START <u>N/A</u> hrs. STOP <u>N/A</u> hrs. (Ref. 6.8.16) Note change to temporary log status in Remarks Section.	Temporary Logs: YES___ NO___ IF Yes, Number of Temporary Logsheets: _____ START _____ hrs. STOP _____ hrs. (Ref. 6.8.16) Note change to temporary log status in Remarks Section.	
OPERATOR: <u>Robert Miller</u> (1) SUPERVISOR: _____	OPERATOR: _____ (1) SUPERVISOR: _____	
(1) Supervisor signature includes responsibility for second review requirements per 0PGP03-ZE-0004, Plant Surveillance Program.		

This form, when completed, SHALL be retained for a minimum of five years.

Operator Logs

Logsheet 1

Modes 1, 2, 3 and 4 Control Room Logsheet

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UNIT: 1 DATE: 11/05/2007

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
BAT A LVL	CP-004	LI-0103	15,000 (1)		N/A GAL	TRM 3.1.2.6	1,2,3,4	(1) ONLY APPLICABLE IF BAT(S) IS DESIGNATED BORON SOURCE. (2) SUM OF OPERABLE BAT TANKS.
BAT A TEMP.		TI-0104	110 (1)		≥ 65°F (1)			
BAT B TEMP.		TI-0107	95		≥ 65°F (1)			
BAT B LVL		LI-0105	30,500		N/A GAL			
BAT VOLUME	N/A	CALC (2)	45,500		≥ 30,400 GAL (1)			
EXCESS LETDN HX 1(2)A OUTL TEMP	CP-004	TI-0229	71					(1) IF >110 F, THEN CONTACT SYSTEM ENGINEERING FOR AN EVALUATION OF IMPACT ON U1118 AND RCS LEAKAGE.
PRZR VAPOR	CP-004	TI-0607	N/A			TRM 3.4.9.2	ALL (2)	(1) TI-0607 MINUS TI-0126. (2) ONLY IF AUX SPRAY IN USE.
REGEN HX TEMP		TI-0126	N/A		N/A			
AUX SPRAY DELTA-T		CALC.	N/A		≤ 621°F (1)			
PORV 655A BLOCK VLV		MOV-0001A			OPEN (1)	3.4.9.3 (2)	4 ONLY	(1) IF PORVs USED FOR COLD OVERPRESSURE PROTECTION. (2) IF ALT VENT PATH ESTABLISHED, THEN LOG VENT VERIF SAT PER TECHNICAL SPECIFICATION 4.4.9.3.2.
PORV 656A BLOCK VLV		MOV-0001B						
CHARGING PUMP PRESSURE	CP-004	PI-0204	2700		CHNL CHECK ≤ 200 PSIG BETWEEN PI-0204 AND PI-0288B/287B/286B	3.3.2 Table 3.3-3, Item 3d-2, Action 16	1,2,3,4	(1) COORDINATE THE READING OF RUNNING PUMP(S) DISCHARGE PRESSURE IN THE CONTROL ROOM (PI-0204) WITH THE READING OF THE MEAB WATCH INDICATION PI-0288B/287B/286B) LOCALLY.
	(1)	PI-0288B PI-0287B PI-0286B	2700					

Non-Critical Error

Correct amount is 30,500.

This form, when completed, SHALL be retained for a minimum of five years.

Operator Logs

Logsheet 1

Modes 1, 2, 3 and 4 Control Room Logsheet

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UNIT: 1 DATE: 11/05/2007

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
RCS TAVG	CP-005	TI-0412A	590.0		≥ 571°F (1) CHNL CHECK 5°F (2)	3.3.2, Table 3.3-3, Item 5f, Action 20 3.1.1.4	1,2,3	(1) IF < 571°F WITH TAVG-TREF DEV ALARM NOT RESET IN MODE 1 OR IN MODE 2 WITH KEFF ≥ 1, THEN COMPLETE LOGSHEET 7. (2) MAX DIFFERENCE BETWEEN OPERABLE CHANNELS.
		TI-0422A	590.0					
		TI-0432A	591.5					
		TI-0442A	591.0					
RCS TAVE DNB PARAMETER	CP-005	CALC (1)	590.625		≤ 595°F	3.2.5	1	(1) AVERAGE OF ALL OPERABLE RCS TAVE CHANNELS (3 MINIMUM).
LOOP DELTA-T	CP-005 OR PLANT COMPUTER (1)	TI-0411	100		≥ 5% BELOW SETPOINT (2)	N/A	1,2 (3)	(1) IF PLANT COMPUTER USED, THEN COMPARE TO PLANT COMPUTER SETPOINT. (2) LOG ACTUAL VALUE. IF LESS THAN 5% BELOW OTDT OR OPDT SETPOINTS, THEN RESTORE MARGIN TO GREATER THAN 5%. (3) N/A IN MODES 3 AND 4. (4) MAX DIFFERENCE BETWEEN OPERABLE CHANNELS DUE TO INSTRUMENT ERROR. LIMIT MAY BE EXCEEDED DUE TO DIFFERENT LOOP OPERATING TEMPERATURES.
		TI-0421	101					
		TI-0431	100					
		TI-0441	101					
OPDT SETPOINT		TI-0412B	107		CHNL CHECK 6% (4)	3.3.1, Table 3.3-1 Items 8,9 Action 6	1,2 (3)	
		TI-0422B	105					
		TI-0432B	108					
		TI-0442B	107					
OTDT SETPOINT		TI-0412C	120		CHNL CHECK 10% (4)		1,2 (3)	
		TI-0422C	122					
		TI-0432C	122					
		TI-0442C	120					
VESSEL FLANGE L/O TEMP	CP-005	TI-0600	57		N/A °F	3.4.6.2	1,2,3,4	<div><div>Non-Critical Error</div><div>Should be identified as having exceeded the administrative limit per log note (2) above.</div></div>

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UNIT: 1 DATE: 11/05/2007

PARAMETER	INSTRUMENT	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
FOP	N/A (1)	250		N/A			<div> (1) FULL OUT POSITION (FOP) FROM PLANT CURVE BOOK TABLE 1.1. (2) RECORD BANK INSERTION LIMIT FOR PRESENT PWR LEVEL FROM CORE OPERATING LIMITS REPORT. (3) FULLY WITHDRAWN AS SPECIFIED IN CORE OPERATING LIMITS REPORT. (4) MODE 2 WITH KEFF ≥ 1. N/A IN MODES 3 AND 4. </div> <div> Critical Error Difference between demand position and DRPI is >12 steps and has not been identified. </div>
CONTROL ROD BANK A POSITION INDICATION	GP. 1 DEMAND POS.	250					
	GP. 2 DEMAND POS.	250					
	DRPI HIGHEST ROD	246					
	DRPI LOWEST ROD	246					
	ROD INS LIMIT (2) (3)	250					
CONTROL ROD BANK B POSITION INDICATION	GP. 1 DEMAND POS.	250					
	GP. 2 DEMAND POS.	250					
	DRPI HIGHEST ROD	246					
	DRPI LOWEST ROD	246					
	ROD INS LIMIT (2)	250					
CONTROL ROD BANK C POSITION INDICATION	GP. 1 DEMAND POS.	250					
	GP. 2 DEMAND POS.	250					
	DRPI HIGHEST ROD	246					
	DRPI LOWEST ROD	246					
	ROD INS LIMIT (2)	250					
CONTROL ROD BANK D POSITION INDICATION	GP. 1 DEMAND POS.	228					
	GP. 2 DEMAND POS.	228					
	DRPI HIGHEST ROD	246					
	DRPI LOWEST ROD	228					
	ROD INS LIMIT (2)	174					

This form, when completed, SHALL be retained for a minimum of five years.

NUCLEAR TRAINING DEPARTMENT
ADMINISTRATIVE JOB PERFORMANCE MEASURE

TITLE: **REVIEW A SUSPENDED SURVEILLANCE**

JPM NO.: **A7**

REVISION: **1**

JOB PERFORMANCE MEASURE WORKSHEET
SOUTH TEXAS PROJECT

JPM Title: REVIEW A SUSPENDED SURVEILLANCE

JPM No.: A7

Rev. No.: 1

STP Task: SRO-12000: Authorize the start of and review surveillance tests

STP Objective: SRO-12000: Authorize the start of surveillance tests and review completion in accordance with OPGP03-ZE-0004

**Related
K/A Reference:** 2.2.12 [3.4] Knowledge of Surveillance Procedures

References: OPGP03-ZE-0004, Rev. 24, Plant Surveillance Program
OPSP03-RC-0009, Rev. 7, RCS Valve Operability Test

**Task Normally
Completed By:** SRO

**Location
of Testing:** NTF

**Time
Critical Task:** NO

**Validation
Time:** 20 minutes

Required Materials (Tools/Equipment):

None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU HAVE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 1 is at 100% power steady state conditions. You are the Unit Supervisor.

An RO was performing 0PSP03-RC-0009, Reactor Coolant System Valve Operability Test. Due to a personnel emergency requiring the attention of the Control Room Staff, the Shift Supervisor directed that the surveillance be suspended in accordance with 0PGP03-ZE-0004, Plant Surveillance Program.

The Shift Supervisor has directed you to perform a technical review of the completed portions of the suspended surveillance. The Shift Supervisor will perform the "Plant Operations Review" section when the surveillance is complete.

INITIATING CUE:

You are to perform a technical review of the suspended surveillance package (including the suspension) and evaluate it for completeness, accuracy, and that it meets procedural requirements. The surveillance will be recommenced when plant conditions are stable (will NOT be an Indefinite Suspension).

Three errors have been inserted into the package, one critical, and two non-critical. As a minimum, you are to identify the Critical error, and one of the two Non-critical errors. Editorial Errors such as spelling, grammar, or punctuation are unintentional and DO NOT COUNT.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Correctly locates the critical error and one of the two non-critical error located in the surveillance package.

JOB PERFORMANCE MEASURE INFORMATION SHEET (CONT.)

HANDOUTS:

1. Completed copy of OPSP03-RC-0009, including the faulted package.
2. Student copy of OPGP03-ZE-0004
3. Student copy of Test Completion Notification (TCN)

NOTES:

1. The evaluator is provided an Answer Key which highlights the applicable procedure steps associated with the inserted errors. The evaluator shall not handout any page(s) marked as "KEY" to the applicant.
2. The content of the errors is also described in the body of the JPM, step 2.

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

SAT/UNSAT Performance Step: 1

Start time: _____

Obtain the Surveillance package and Plant Surveillance Program procedure.

Standard:

The examinee obtains a copy of the completed surveillance package with Test Completion Notification and Plant Surveillance Program procedure from the evaluator.

Comment:

Cue:

Provide the following to the applicant:

1. Completed copy of 0PSP03-RC-0009
2. Student copy of 0PGP03-ZE-0004
3. Student copy of Test Completion Notification

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2 (C)*

Review the faulted surveillance package and discuss errors and/or omissions located within the surveillance.

Standard:

**As a minimum, the examinee correctly locates the critical error and one of two non-critical errors inserted in the suspended surveillance:*

- 1) Page 2 *The Test Performer did not indicate that the test was being performed for surveillance credit. Since this error only affects documentation and not equipment performance, it is **NOT Critical**.*
- 2) Page 3 *The Test performer did not include a justification for marking steps not performed as "N/A" as required by step 3.19. Because this error only affects documentation and not equipment performance, this error is **NOT Critical***
- 3) Page 15 *The Test Performer suspended the surveillance after a closed stroke of Pressurizer PORV isolation MOV-0001, and did not return it to its original (safe) position of OPEN. The applicant must identify that ***EITHER*** the MOV should be opened (as required by OPGP03-ZE-0004, step 6.4.1.3.c) ***OR*** the Shift Supervisor is notified of the change in system configuration that was affected by the surveillance (as required by OPGP03-ZE-0004, step 6.4.1.3.b) (**Critical Error**)*.*

Comment:

The reason for the surveillance suspension is valid as per OPGP03-ZE-0004, Addendum 2 (Surveillance Test Suspension Guidelines), step 1.e.

Cue:

Notes:

- TERMINATE THE JPM -

Stop time:_____

VERIFICATION OF COMPLETION

Job Performance Measure: REVIEW A SUSPENDED SURVEILLANCE

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature _____

Date _____

JPM - STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Unit 1 is at 100% power steady state conditions. You are the Unit Supervisor.

An RO was performing 0PSP03-RC-0009, Reactor Coolant System Valve Operability Test. Due to a personnel emergency requiring the attention of the Control Room Staff, the Shift Supervisor directed that the surveillance be suspended in accordance with 0PGP03-ZE-0004, Plant Surveillance Program.

The Shift Supervisor has directed you to perform a technical review of the completed portions of the suspended surveillance. The Shift Supervisor will perform the "Plant Operations Review" section when the surveillance is complete.

INITIATING CUE:

You are to perform a technical review of the suspended surveillance package (including the suspension) and evaluate it for completeness, accuracy, and that it meets procedural requirements. The surveillance will be recommenced when plant conditions are stable (will NOT be an Indefinite Suspension).

Three errors have been inserted into the package, one critical, and two non-critical. As a minimum, you are to identify the Critical error, and one of the two Non-critical errors. Editorial Errors such as spelling, grammar, or punctuation are unintentional and DO NOT COUNT.

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Reactor Coolant System Valve Operability Test			
Quality	Safety-Related	Usage: IN HAND	Effective Date: 12/15/05
R. Hamilton	J. C. Heil	Crew 2D	Operations
PREPARER	TECHNICAL	USER	COGNIZANT DEPT.

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This procedure, when complete, SHALL be retained for the life of the plant.

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Reactor Coolant System Valve Operability Test			

Procedure Performance Data Sheet

Unit Number: <i>1</i>	Work Activity Number: <i>290611</i>	-ST: <i>87000288</i>
Technical Specification Reference: 4.0.5 [ITS 5.5.8], 4.4.4.2 [ITS SR 3.4.11.1], 4.6.3.1 [ITS NONE], 4.6.3.3 [ITS SR 3.6.3.5]		
Test Interval: Per the Surveillance Database	Test Performance Allowed in Plant Modes: 1, 2, 3, 4, 5, 6 or Core Off Loaded to the Spent Fuel Pool	Train Ref: Not Applicable
Reason for Test: <input checked="" type="checkbox"/> Periodic Surveillance Test (MOV-0001A and MOV-0001B only) <input type="checkbox"/> Maintenance per Work Package # <i>N/A</i> <input type="checkbox"/> Other <i>N/A</i>		
<input type="checkbox"/> For Surveillance Credit <input type="checkbox"/> Not for Surveillance Credit		
Radiation Work Permit No.: <i>N/A</i>	Fire Hazard Evaluation No.: <i>N/A</i>	Equipment Clearance No.: <i>N/A</i>
Administrative Approval to Perform Test: <div style="display: flex; justify-content: space-between;"> <div><i>James Madison</i></div> <div><i>Today</i></div> <div><i>2 hours ago</i></div> </div> <div style="display: flex; justify-content: space-between;"> <div>Shift Supervisor</div> <div>Date</div> <div>Time</div> </div>		
Test Results Review: <input type="checkbox"/> Acceptable - All data within acceptance criteria <input type="checkbox"/> Unacceptable - Any data NOT within acceptance criteria (explain in Remarks) Reviewed by: _____ <div style="display: flex; justify-content: space-between;"> <div>Test Coordinator</div> <div>Date</div> <div>Time</div> </div>		
Plant Operations Review: <div style="display: flex; justify-content: space-between;"> <div>All Data Within Acceptance Criteria?</div> <div><input type="checkbox"/> Yes</div> <div><input type="checkbox"/> No</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Equipment is Operable?</div> <div><input type="checkbox"/> Yes</div> <div><input type="checkbox"/> No</div> </div> <div style="display: flex; justify-content: space-between;"> <div>OAS required? OAS No. _____</div> <div><input type="checkbox"/> Yes</div> <div><input type="checkbox"/> No</div> </div> <div>Corrective Action Taken:</div>		
Reviewed By _____ <div style="display: flex; justify-content: space-between;"> <div>Shift Supervisor</div> <div>Date</div> <div>Time</div> </div>		
Division Surveillance Coordinator Review: Reviewed By: _____ <div style="display: flex; justify-content: space-between;"> <div>Division Surveillance Coordinator</div> <div>Date</div> <div>Time</div> </div>		

This procedure, when complete, SHALL be retained for the life of the plant.

Reactor Coolant System Valve Operability Test

Section XI Coordinator Review (MOV-0001A and MOV-0001B only):

- ☐ Acceptable - All data within acceptance criteria
☐ Unacceptable - Data within Required Action Range

Corrective Action Taken:

Reviewed By: _____

M&TE Used:

Description	STPEGS No.	Cal. Due Date
Stopwatch	100-00711 011	1/12/08

Performers and Verifiers:

Name (Print)	Signature	Initials
Samuel Adams	<i>Samuel Adams</i>	<i>SBA</i>
Ben Edwards	<i>Benjamin Edwards</i>	<i>BE</i>

Remarks: NOTE 1 - At the direction of the Shift Supervisor, suspended performance of 0PSP03-RC-0009 at step 5.5.2 due to a personnel injury requiring the attention of the Control Room Staff. Completed step 5.5.2 and will recommence as determined by Shift Supervisor. Logged suspension of the surveillance in the Control Room Log.

Suspension date and time: Today, 20 minutes ago

This procedure, when complete, SHALL be retained for the life of the plant.

Reactor Coolant System Valve Operability Test**1.0 Purpose and Scope**

- 1.1 This procedure satisfies the requirements of the following Technical Specifications for the valves listed in Step 1.4:
- 4.0.5 [ITS 5.5.8] Performing inservice testing of the Reactor Coolant System valves.
 - 4.4.4.2 [ITS SR 3.4.11.1] Demonstrating each block valve is Operable by operating the valve through one complete cycle of full travel.
- 1.2 This procedure satisfies the requirements of the following Technical Specifications for the valves listed in Step 1.5:
- 4.6.3.1 [ITS NONE] This procedure demonstrates Reactor Coolant System Containment Isolation Valves are Operable by cycling the valves and verifying isolation times as required by Technical Specification 4.6.3.1 prior to being returned to service after maintenance, repair, or replacement work is performed on the valve, associated actuator, or control or power circuit.
- 1.3 This procedure provides instructions for verifying that the Reactor Coolant System valves listed in UFSAR Table 16.1-1 (Containment Isolation Valves), are Operable by cycling each valve and verifying the following:
- Full valve stroke in open and closed direction.
 - Stroke time is within acceptance criteria.
- 1.4 This procedure is applicable to the following valves (refer to Step 1.1):
- ISOL MOV-0001A (PRZR PORV Isol)
 - ISOL MOV-0001B (PRZR PORV Isol)
- 1.5 This procedure is applicable to the following valves (refer to Step 1.2):
- OCIV FV-3651 (Reactor Makeup Water Containment Isolation Valve)
 - OCIV FV-3652 (PRT Vent)
 - ICIV FV-3653 (PRT Vent)
- 1.6 The Surveillance Test Completion Notice (TCN) specifies the scope of testing to be accomplished. IF no scope is specified, THEN test all components listed in Step 1.4.

This procedure, when complete, SHALL be retained for the life of the plant.

Reactor Coolant System Valve Operability Test**2.0** Responsibilities

- 2.1 Test Coordinator shall ensure that the procedure revision is correct and that all applicable Field Changes are incorporated.
- 2.2 Shift Supervisor shall grant permission to perform this test.
- 2.3 This procedure shall be performed by Plant Operations.
- 2.4 WHEN “____” (blank) follows a step, THEN the performer shall enter initials to verify step completion.

NOTE

After completion, procedure routing is per 0PGP03-ZE-0004 (Plant Surveillance Program) and 0PGP03-ZA-0055 (Plant Surveillance Scheduling).

- 2.5 The following personnel shall review the test results:

- Test Coordinator
- Shift Supervisor
- Division Surveillance Coordinator
- Section XI Coordinator (MOV-0001A and MOV-0001B only)

This procedure, when complete, SHALL be retained for the life of the plant.

Reactor Coolant System Valve Operability Test

3.0 Precautions and Notes

- 3.1 IF a reactor trip occurs while this test is being performed, THEN immediately position the valve being tested to the original position or as required for plant conditions and suspend the test.
- 3.2 IF Phase A Containment Isolation occurs while this test is being performed, THEN ensure the valve being tested closes and suspend the test.
- 3.3 IF this procedure cannot be performed as written, THEN the procedure performer shall stop and immediately notify the Shift Supervisor.
- 3.4 IF this procedure is terminated for any reason, THEN immediately notify the Shift Supervisor.
- 3.5 IF any acceptance criteria are NOT met, THEN immediately notify the Shift Supervisor and document the failure per 0PGP03-ZE-0004 (Plant Surveillance Program).
- 3.6 IF a valve listed in Step 1.4 with measured stroke times **DOES NOT** meet the Acceptance Criteria AND **DOES NOT** exceed limiting values per CREE 98-12276, THEN the valve **SHALL** be immediately retested, OR declared inoperable per 0PGP03-ZE-0021, Inservice Testing Program for Valves.
- 3.7 IF a valve listed in Step 1.5 with measured stroke times **DOES NOT** meet the Acceptance Criteria, THEN the valve **SHALL** be immediately declared inoperable.
- 3.8 At RCS pressure greater than 200 psig the PORV may “pop” open when the associated isolation valve is reopened. Operators should be alert to possible transients as a result of the PORV “pop”.
- 3.9 Valves declared inoperable may be repaired, replaced or the data may be analyzed to determine the cause of the deviation and the valve shown to be operating acceptably. Valve Operability based on analysis shall have the results of the analysis documented.
- 3.10 WHEN FV-3651 is closed, THEN Reactor Makeup Water to the Reactor Coolant Pump Standpipe is isolated.
- 3.11 WHEN the Reactor Coolant System valves are cycled, THEN ESF Status Monitoring Lights and ERFDADS Computer Points may alarm and clear. IF any alarm failures are observed, THEN record the failure in the Remarks Section of the Procedure Performance Data Sheet (PPDS).
- 3.12 This procedure should be reviewed in its entirety prior to performing the test.
- 3.13 Consider the need for a Prejob Briefing based on current plant conditions, Work Risk Assessment, and other factors.

This procedure, when complete, **SHALL** be retained for the life of the plant.

Reactor Coolant System Valve Operability Test

- 3.14 Acceptance criteria steps are annotated with the letters AC in the left margin preceding the step.
- 3.15 Isolation times for each valve tested should be recorded to the nearest one-hundredth (0.01) seconds.
- 3.16 Valves tested in this procedure shall be opened and closed by normal operation without any preliminary or subsequent exercising or adjustments. Cycling a valve or mechanical agitation (tapping) of a valve prior to testing is NOT allowed. (Ref 7.4.1)
- 3.17 To ensure an air-operated valve has sufficient time to reach normal air pressure prior to stroke-timing the valve, approximately two minutes should have elapsed since the valve was last stroked.
- 3.18 This procedure is written assuming that the Reactor Coolant System is in its normal lineup with all valves open. Sections 5.2 through 5.6 may be performed in any order. IF any valve is closed, THEN the steps that close and open the valve(s) may be reversed. (Example: Step 5.2.3 may be performed first, followed by Step 5.2.2)
- 3.19 Justify use of "N/A" in the Remarks section when marking steps N/A for components **NOT** specified to be tested by the Test Completion Notice. Use of "N/A" is not required to be justified in the Control Room Log but is required to be documented in the Remarks section of this procedure.

This procedure, when complete, SHALL be retained for the life of the plant.

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Reactor Coolant System Valve Operability Test			

Initials

4.0 Prerequisites

- 4.1 Ensure that the procedure revision is correct and that all applicable Field Changes are incorporated. SBA
- 4.2 This procedure may be performed in any plant Mode. Record current plant Mode:
Mode I
- 4.3 Review Operability Assessment System (OAS) to ensure no equipment is out of service that could conflict with test completion while performing this test. SBA
- 4.4 Obtain a calibrated stopwatch that reads in hundredths of a second and is accurate to $\pm 1\%$. SBA
- 4.5 Record the following as applicable on the PPDS:
- Unit Number
 - Work Activity Number
 - Surveillance Test (ST) Number(s)
 - Reason for Test (Mark boxes and blanks as applicable)
 - M&TE Used (Stopwatches)
- SBA
- 4.6 IF this procedure is being performed to demonstrate post-maintenance operability, THEN N/A the applicable subsection(s) for the component(s) **NOT** being tested, OTHERWISE N/A this step. N/A
- 4.7 IF this procedure is being performed for scheduled surveillance testing AND **NOT** all components are being tested, THEN N/A applicable sub-section(s) for any component **NOT** being tested. OTHERWISE N/A this step. SBA

This procedure, when complete, SHALL be retained for the life of the plant.

Reactor Coolant System Valve Operability Test

Initials

- 4.8 Evaluate current plant conditions and note in the Remarks Section of the PPDS any changes in Work Risk Assessment due to special plant conditions.

SBA

Work Risk Assessment by Plant Mode

Reactor Trip Potential:

Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	No Mode
LOW	LOW	NONE	NONE	NONE	NONE	NONE

Turbine Trip Potential:

Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	No Mode
NONE	NONE	NONE	NONE	NONE	NONE	NONE

ESF Actuation Potential:

Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	No Mode
LOW	LOW	LOW	LOW	NONE	NONE	NONE

- 4.9 Notify the Shift Supervisor to review Technical Specification 3.4.4, 3.4.9.3 and 3.6.3 [ITS 3.4.11, 3.4.12, 3.4.13 and 3.6.3] for Operability and LCO requirements.
- 4.10 Obtain Shift Supervisor's signature on the PPDS for administrative approval to perform test.

SBASBA5.0 Procedure5.1 **Preparation**

- 5.1.1 Ensure Prerequisites have been completed and Precautions and Notes have been read.
- 5.1.2 Note any changes in Work Risk Assessment as noted in the Remarks Section of PPDS.
- 5.1.3 Ensure that a Control Room Logbook entry documents the commencement of this surveillance test.

SBASBASBA

This procedure, when complete, SHALL be retained for the life of the plant.

Reactor Coolant System Valve Operability Test

InitialsNOTE

- This procedure is written assuming that the Reactor Coolant System is in its normal lineup. For purposes of this procedure, each valve tested should be stroked once in each direction and left in its original position. (Ref 7.4.1) Immediately notify the Shift Supervisor of any unsatisfactory test results.
- Sections 5.2 through 5.6 may be performed in any order, and the order of the closed and open steps may be reversed to meet existing plant configuration.

5.2 Full Stroke and Isolation Time Test of OCIV FV-3651

5.2.1 Record the AS FOUND position for the following:

5.2.1.1 "OCIV FV-3651" Reactor Makeup Water Containment Isolation Valve N/A N/A

5.2.1.2 "OCIV FV-3651" handswitch N/A N/A

5.2.2 OCIV FV-3651 Close Exercise and Stroke Time Test

5.2.2.1 Ensure that at least 2 minutes has elapsed since the last open stroke of OCIV FV-3651. N/A

5.2.2.2 Simultaneously start the stopwatch and close "OCIV FV-3651" by placing the handswitch located on CP004 to CLOSE. N/A

AC

5.2.2.3 WHEN "OCIV FV-3651" is full closed (green lamp lit and red lamp extinguished), THEN stop stopwatch and record time:

N/A seconds

Acceptance Criteria: ≤ 10.00 seconds

5.2.2.4 Return the "OCIV FV-3651" handswitch located on CP004 to AUTO. N/A

This procedure, when complete, SHALL be retained for the life of the plant.

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Reactor Coolant System Valve Operability Test			

Initials

AC	5.2.3	OCIV FV-3651 Open Exercise Test	
	5.2.3.1	Open “OCIV FV-3651” by momentarily placing the handswitch located on CP004 to OPEN.	<u>N/A</u>
	5.2.3.2	Verify that the valve goes full open (red lamp illuminated and green lamp off).	<u>N/A</u>
	5.2.3.3	Ensure that the handswitch for “OCIV FV-3651” located on CP004 has returned to AUTO.	<u>N/A</u>
	5.2.4	Ensure “OCIV FV-3651” is in the AS FOUND position recorded in Step 5.2.1, or to a position as specified by the Unit/Shift Supervisor.	<u>N/A</u>
			Perform <u>N/A</u>
			Ind. Verif
	5.2.5	Record the AS LEFT position for the following:	
	5.2.5.1	“OCIV FV-3651” Reactor Makeup Water Containment Isolation Valve.	
		AS LEFT position <u>N/A</u>	<u>N/A</u>
	5.2.5.2	“OCIV FV-3651” handswitch.	
		AS LEFT position <u>N/A</u>	<u>N/A</u>

This procedure, when complete, SHALL be retained for the life of the plant.

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Reactor Coolant System Valve Operability Test			

Initials

5.3 Full Stroke and Isolation Time Test of OCIV FV-3652

5.3.1 Record the AS FOUND position for the following:

5.3.1.1 "OCIV FV-3652" PRT Vent N/A N/A

5.3.1.2 "OCIV FV-3652" handswitch N/A N/A

5.3.2 OCIV FV-3652 Open Exercise Test

5.3.2.1 Open "OCIV FV-3652" by momentarily placing the handswitch located on CP004 to OPEN. N/A

AC

5.3.2.2 Verify that the valve goes full open (red lamp lit and green lamp extinguished). N/A

5.3.2.3 Ensure that the handswitch for "OCIV FV-3652" located on CP004 has returned to AUTO. N/A

5.3.3 OCIV FV-3652 Close Exercise and Stroke Time Test

5.3.3.1 Ensure that at least 2 minutes has elapsed since the last open stroke of OCIV FV-3652. N/A

5.3.3.2 Simultaneously start the stopwatch and close "OCIV FV-3652" by placing the handswitch located on CP004 to CLOSE. N/A

AC

5.3.3.3 WHEN "OCIV FV-3652" is full closed (green lamp lit and red lamp extinguished), THEN stop stopwatch and record time:

N/A seconds N/A

Acceptance Criteria: ≤ 10.00 seconds

5.3.3.4 Return the "OCIV FV-3652" handswitch located on CP004 to AUTO. N/A

This procedure, when complete, SHALL be retained for the life of the plant.

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Reactor Coolant System Valve Operability Test			

Initials

- 5.3.4 Ensure "OCIV FV-3652" is in the AS FOUND position recorded in Step 5.3.1, or to a position as specified by the Unit/Shift Supervisor. N/A
Perform N/A
Ind. Verif
- 5.3.5 Record the AS LEFT position for the following:
- 5.3.5.1 "OCIV FV-3652" PRT Vent N/A N/A
- 5.3.5.2 "OCIV FV-3652" handswitch N/A N/A
- 5.4 **Full Stroke and Isolation Time Test of ICIV FV-3653**
- 5.4.1 Record the AS FOUND position for the following:
- 5.4.1.1 "ICIV FV-3653" PRT Vent Isolation Valve N/A N/A
- 5.4.1.2 "ICIV FV-3653" handswitch N/A N/A
- 5.4.2 ICIV FV-3653 Open Exercise Test
- 5.4.2.1 Open "ICIV FV-3653" by momentarily placing the handswitch located on CP004 to OPEN. N/A
- 5.4.2.2 Verify that the valve goes full open (red lamp lit and green lamp extinguished). N/A
- 5.4.2.3 Ensure that the handswitch for "ICIV FV-3653" located on CP004 has returned to AUTO. N/A
- 5.4.3 ICIV FV-3653 Close Exercise and Stroke Time Test
- 5.4.3.1 Simultaneously start the stopwatch and close "ICIV FV-3653" by placing the handswitch located on CP004 to CLOSE. N/A

AC

This procedure, when complete, SHALL be retained for the life of the plant.

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Reactor Coolant System Valve Operability Test			

Initials

AC

5.4.3.2 WHEN "ICIV FV-3653" is full closed
(green lamp lit and red lamp extinguished),
THEN stop stopwatch and record time:

N/A seconds

N/A

Acceptance Criteria: ≤ 5.00 seconds

5.4.3.3 Return the "ICIV FV-3653" handswitch located on
CP004 to AUTO.

N/A

5.4.4 Ensure "ICIV FV-3653" is in the AS FOUND position recorded in
Step 5.4.1, or to a position as specified by the Unit/Shift Supervisor.

N/A

Perform

N/A

Ind. Verif

5.4.5 Record the AS LEFT position for the following:

5.4.5.1 "ICIV FV-3653" PRT Vent Isolation Valve N/A

N/A

5.4.5.2 "ICIV FV-3653" handswitch N/A

N/A

This procedure, when complete, SHALL be retained for the life of the plant.

Reactor Coolant System Valve Operability Test

Initials

5.5 Full Stroke and Isolation Time Test of ISOL MOV-0001A

5.5.1 Record the AS FOUND position for the following:

5.5.1.1 "ISOL MOV-0001A" PRZR PORV Isol Open SBA5.5.1.2 "ISOL MOV-0001A" handswitch Norm SBA

5.5.2 ISOL MOV-0001A Close Exercise and Stroke Time Test

5.5.2.1 Simultaneously start the stopwatch and close "ISOL MOV-0001A" by placing the handswitch located on CP004 to CLOSE. SBA

AC

5.5.2.2 WHEN "ISOL MOV-0001A" is full closed (green lamp lit and red lamp extinguished), THEN stop stopwatch and record time:16.97 secondsSBA

NOTE 1

Acceptance Criteria: Unit 1 12.97 sec $\leq t \leq$ 17.55
Unit 2 13.26 sec $\leq t \leq$ 17.95**CAUTION**

At RCS pressure greater than 200 psig the PORV may "pop" open when the associated isolation valve is reopened. Operators should be alert to possible transients as a result of the PORV "pop".

5.5.3 ISOL MOV-0001A Open Exercise and Stroke Time Test

5.5.3.1 Simultaneously start the stopwatch and open "ISOL MOV-0001A" by placing the handswitch located on CP004 to OPEN. _____

AC

5.5.3.2 WHEN "ISOL MOV-0001A" is full open (red lamp lit and green lamp extinguished), THEN stop stopwatch and record time:

_____ seconds _____

Acceptance Criteria: Unit 1 12.34 sec $\leq t \leq$ 16.70
Unit 2 12.69 sec $\leq t \leq$ 17.17

This procedure, when complete, SHALL be retained for the life of the plant.

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Reactor Coolant System Valve Operability Test			

Initials

- 5.5.4 Ensure “ISOL MOV-0001A” is in the AS FOUND position recorded in Step 5.5.1, or to a position as specified by the Unit/Shift Supervisor.

_____ Perform

_____ Ind. Verif

- 5.5.5 Record the AS LEFT position for the following:

5.5.5.1 “ISOL MOV-0001A” PRZR PORV Isol _____

5.5.5.2 “ISOL MOV-0001A” handswitch _____

5.6 Full Stroke and Isolation Time Test of ISOL MOV-0001B

- 5.6.1 Record the AS FOUND position for the following:

5.6.1.1 “ISOL MOV-0001B” PRZR PORV Isol _____

5.6.1.2 “ISOL MOV-0001B” handswitch _____

- 5.6.2 ISOL MOV-0001B Close Exercise and Stroke Time Test

5.6.2.1 Simultaneously start the stopwatch and close “ISOL MOV-0001B” by placing the handswitch located on CP004 to CLOSE. _____

AC

5.6.2.2 WHEN “ISOL MOV-0001B” is full closed (green lamp lit and red lamp extinguished), THEN stop stopwatch and record time:

_____ seconds _____

Acceptance Criteria: Unit 1 13.08 sec ≤ t ≤ 17.70
Unit 2 13.26 sec ≤ t ≤ 17.94

This procedure, when complete, SHALL be retained for the life of the plant.

Initials

CAUTION

At RCS pressure greater than 200 psig the PORV may “pop” open when the associated isolation valve is reopened. Operators should be alert to possible transients as a result of the PORV “pop”.

5.6.3 ISOL MOV-0001B open Exercise and Stroke Time Test

5.6.3.1 Simultaneously start the stopwatch and open “ISOL MOV-0001B” by placing the handswitch located on CP004 to OPEN.

AC

5.6.3.2 WHEN “ISOL MOV-0001B” is full open (red lamp lit and green lamp extinguished), THEN stop stopwatch and record time:

_____ seconds

Acceptance Criteria: Unit 1 12.41 sec ≤ t ≤ 16.79
Unit 2 12.74 sec ≤ t ≤ 17.24

5.6.4 Ensure “ISOL MOV-0001B” is in the AS FOUND position recorded in Step 5.6.1, or to a position as specified by the Unit/Shift Supervisor.

_____ Perform

_____ Ind. Verif

5.6.5 Record the AS LEFT position for the following:

5.6.5.1 “ISOL MOV-0001B” PRZR PORV Isol

5.6.5.2 “ISOL MOV-0001B” handswitch

This procedure, when complete, SHALL be retained for the life of the plant.

Reactor Coolant System Valve Operability Test

Initials

5.7 Restoration and Documentation

- 5.7.1 Notify Shift Supervisor that testing is complete. _____
- 5.7.2 Ensure that a Control Room Logbook entry documents the completion of this surveillance test. _____
- 5.7.3 IF any valve is placed or left in a different position than the original AS FOUND position, THEN explain the reason for the different AS LEFT position in the Remarks Section of PPDS. _____
- 5.7.4 Complete Test Results Section of PPDS. _____
- 5.7.5 Ensure M&TE Section of PPDS is complete. _____
- 5.7.6 Ensure required information has been recorded on the M&TE Usage form (WOFWOME) in STP IMPACT for each piece of M&TE used. (Ref. 7.4.2) _____
- 5.7.7 Ensure Performers and Verifiers Section of PPDS is complete. _____
- 5.7.8 IF any problems occurred, THEN initiate Condition Report(s) and log Condition Report number(s) in Remarks Section of PPDS, OTHERWISE N/A this step. _____
- 5.7.9 Forward procedure to Shift Supervisor for review. _____

6.0 Acceptance Criteria

- 6.1 The following Reactor Coolant System Valves shall stroke full open and full closed with stroke times within the acceptance criteria listed at the applicable steps:
- FV-3651 (Steps 5.2.2.3 and 5.2.3.2)
 - FV-3652 (Steps 5.3.3.3 and 5.3.2.2)
 - FV-3653 (Steps 5.4.3.2 and 5.4.2.2)
 - MOV-0001A (Steps 5.5.2.2 and 5.5.3.2)
 - MOV-0001B (Steps 5.6.2.2 and 5.6.3.2)

This procedure, when complete, SHALL be retained for the life of the plant.

Reactor Coolant System Valve Operability Test**7.0** References**7.1** **Technical Specifications**

- 7.1.1 Technical Specification 3.6.3 [ITS 3.6.3]
- 7.1.2 Technical Specification 3.4.4 [ITS 3.4.11].
- 7.1.3 Technical Specification 4.0.5 [ITS 5.5.8]
- 7.1.4 Technical Specification 3.4.9.3 [ITS 3.4.12, 3.4.13]

7.2 **Regulatory Guides and Standards**

- 7.2.1 None

7.3 **UFSAR**

- 7.3.1 Section 3.9.6.2 (Inservice Testing of Valves)
- 7.3.2 Sections 5.4.10 and 5.4.11
- 7.3.3 Section 6.2.4.2.2 (Basis for Containment Isolation Valve Closure Time)
- 7.3.4 Table 16.1-1 (Containment Isolation Valves)

7.4 **Commitments**

- 7.4.1 GL 91-015 (Operating Feedback Report, Solenoid Operated Valve Problems at U.S. Reactors)
- 7.4.2 SPR 941413 (M&TE Issue sheets not completed for each use of the instrument)
- 7.4.3 CREE 01-11507-10, Implementation of Stroke Time Testing Requirement for Power Operated Valves

7.5 **Technical Standards and Manuals**

- 7.5.1 Unit 1 / Unit 2 Pump and Valve Inservice Test Plan

This procedure, when complete, SHALL be retained for the life of the plant.

Reactor Coolant System Valve Operability Test**7.6 Drawings**

7.6.1 Piping and Instrumentation Diagrams

7.6.1.1 5R149F05003 #1, #2 (RCS Pressurizer)

7.6.1.2 5R149F05004 #1, #2 (RCS Pressurizer Relief Tank)

7.6.2 Elementary Diagrams

7.6.2.1 9-E-RC05-01 #1, #2 (Reactor Pressurizer Relief Isolation MOV-0001A and MOV-0001B)

7.6.2.2 9-E-RC16-01 #1, #2 (Reactor Coolant Pressurizer Containment Isolation Solenoid Valve FV-3653)

7.6.2.3 9-E-RC17-01 #1, #2 (Reactor Coolant Pressurizer Isolation Valve FV-3651, 3652)

7.6.3 Logic Diagrams

7.6.3.1 5R149Z42155 #1, #2 (Reactor Coolant Pressurizer Relief Isolation Valves)

7.6.3.2 5R149Z42157 #1, #2 (Reactor Coolant Pressurizer Relief TK Containment Isolation Valves)

7.6.3.3 5R149Z42158 #1, #2 (Reactor Coolant Pressurizer Containment Isolation Solenoid Valve)

7.7 STPEGS Procedures and Policies

7.7.1 0PGP03-ZE-0004 (Plant Surveillance Program)

7.7.2 0PGP03-ZA-0055 (Plant Surveillance Scheduling)

7.7.3 0PGP03-ZE-0021 (Inservice Testing Program for Valves)

7.7.4 0PGP03-ZC-0004 (Measuring and Test Equipment Control Program) Calculations

7.7.5 CR 98-12276, O&M Code Calculation of Stroke Time Acceptance Criteria

8.0 Support Documents

8.1 None

This procedure, when complete, SHALL be retained for the life of the plant.

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Quality	Safety-Related	Usage: Available	Effective Date: 06/28/06
B. J. Scott	B. J. Scott	N/A	Engineering
PREPARER	TECHNICAL	USER	COGNIZANT ORGANIZATION

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Plant Surveillance Program**1.0 Purpose and Scope**

- 1.1 This procedure describes the administrative structure and division of responsibilities for implementation and control of the Plant Surveillance Program.
- 1.2 This procedure is applicable to those tests, inspections, and analyses performed to satisfy Technical Specification surveillance requirements.
- 1.3 This procedure is applicable to those tests, inspections, and analyses performed to satisfy Technical Requirements Manual and Offsite Dose Calculation Manual surveillance requirements.

2.0 Definitions

- 2.1 **ADMINISTRATIVE WINDOW:** Time period before the Due Date during which the test may be performed.
- 2.2 **APPLICABILITY MODES (AMODE):** Operational modes specified in the Technical Specifications for a limiting condition for operation during which surveillance requirements SHALL be met.
- 2.3 **CONDITIONAL SURVEILLANCE:** Non-periodic surveillance tests required during a specific set of plant conditions, as specified by Technical Specifications, and which are not scheduled. Periodic surveillances that are based on equipment run time (for example, 720 hours of filter use or 31 effective full power days (EFPD)) are also considered to be conditional.
- 2.4 **COGNIZANT MANAGER:** Division or Department Manager/Director of a work organization which performs surveillances or writes surveillance procedures. Responsibilities are defined in procedure step 3.1.
- 2.5 **DATABASE:** The data that is utilized by the surveillance software in support of the Surveillance Scheduling Program. Also referred to as the SURVEILLANCE DATABASE.
- 2.6 **DATA PACKAGE:** Surveillance procedures, procedure forms or addenda used to record surveillance test data and provide a record of test performance, test results, and data review.
- 2.7 **DIVISIONAL SURVEILLANCE COORDINATOR (DSC):** Person designated by the Cognizant Manager to perform surveillance coordination duties for the applicable Performing Section. Responsibilities are defined in procedure step 3.5.
- 2.8 **DIVISIONAL SURVEILLANCE GUIDE (DSG):** A desktop instruction maintained by the DSCs in accordance with 0PAP01-ZA-0105, Desktop Instruction Guidelines. This guide describes division specific tasks performed to satisfy the Surveillance Program and Surveillance Scheduling requirements. (SPR 940498)

Plant Surveillance Program

- 2.9 **GRACE PERIOD:** Time period after the surveillance test due date but before a Limiting Condition for Operation Action Statement is entered. This period is based on a maximum allowable extension not to exceed 25% of the surveillance interval. Exceptions to these requirements are stated in the individual Technical Specifications. The 25% grace period is not intended to be used repeatedly as a convenience to extend surveillance intervals beyond that specified, in accordance with the basis of Technical Specification 4.0.2.
- 2.10 **IMPLEMENTATION DATE:** The specified date on which the surveillance testing program commences for a particular surveillance item. This date need not be the same for all surveillance items.
- 2.11 **INDEFINITE SUSPENSION:** To cease the performance of a surveillance test with the intent of discontinuing the test.
- 2.12 **MODE CHANGE SURVEILLANCE REPORT:** A listing of surveillance tests that are required for plant mode changes.
- 2.13 **OUTSTANDING SURVEILLANCE REPORT (Status 70 Report):** A listing of surveillance tests for which test packages have been issued and performed but not, as yet submitted for retention.
- 2.14 **OVERDUE SURVEILLANCE REPORT:** A listing of surveillance tests which are not completed prior to the surveillance test due date and those which are due but are not performed due to plant mode.
- 2.15 **PERFORMING SECTION:** Department or Division responsible for performing a surveillance requirement.
- 2.16 **PLANT CONDITION MODE (PCMODE):** Plant operational mode during which a surveillance requirement/test can be performed.
- 2.17 **PLANT SURVEILLANCE COORDINATOR (PSC):** Person designated to perform overall coordination of the plant surveillance program. Responsibilities are defined in procedure step 3.3.
- 2.18 **PLANT SURVEILLANCE PROCEDURES:** Procedures which are used to perform surveillance tests. See section 6.1 of this procedure for additional details.
- 2.19 **PRECONDITIONING:** Maintenance or operational activities that alter the physical condition of the equipment and are routinely performed prior to or during the surveillance tests, which could improve the performance of the component being tested. See Addendum 6 for discussion on preconditioning.
- 2.20 **PROCEDURE PERFORMANCE DATA SHEET:** Front page of surveillance record which identifies test requirements, test remarks, test acceptance and review signatures. Also referred to Data Package Cover Sheet

Plant Surveillance Program

- 2.21 **RECORD DATE:** Date that surveillance is evaluated as acceptable by the Test Coordinator. This is the date used on the Test Completion Notification and entered into the surveillance database.
- 2.22 **STAGGERED TEST BASIS:**
- 2.22.1 A test schedule for **n** systems, subsystems, trains or other designated components obtained by dividing the specified test interval into **n** equal subintervals, and
- 2.22.2 The testing of one system, subsystem, train, or other designated component at the beginning of each subinterval. (Surveillances are scheduled in train weeks to avoid the possibility of cross train events. Staggered surveillances are scheduled in their train weeks and must be staggered as much as possible within the train scheduling framework.)
- 2.23 **SURVEILLANCE LOGS:** A record of surveillance data normally used to document surveillance tests with weekly or shorter frequencies.
- 2.24 **SURVEILLANCE PROGRAM GUIDE (SPG):** A desktop instruction maintained by the PSC in accordance with 0PAP01-ZA-0105, Department Instruction Guidelines. This guide can be used by the DSCs for training and reference during detailed activities within the Surveillance Program. (SPR 940498)
- 2.25 **SURVEILLANCE TEST:** A test, inspection or analysis that is required by the Technical Specifications, Technical Requirements Manual, or Offsite Dose Calculation Manual.
- 2.26 **SURVEILLANCE TEST DROP DEAD DATE:** The surveillance test due date plus the grace period. Also referred to as the DROP DEAD DATE.
- 2.27 **SURVEILLANCE TEST DUE DATE:** The scheduled date by which the surveillance test should be completed. This date is based on the required test frequency and the last successfully completed surveillance test. Also referred to as the DUE DATE.
- 2.28 **SUSPENSION:** To temporarily defer the performance of surveillance procedural steps after the permission to start the test has been granted and the test prerequisites have been completed. Surveillance Test suspension is required if the test is temporarily stopped due to a plant condition or situation. Suspension is also required if the prerequisites must be re-verified. The test coordinator or designee may suspend a test if deemed necessary. (See Addendum 2 for additional guidance)
- 2.29 **TERMINATION:** Surveillance TERMINATION occurs when some emergent condition in the plant requires that all unnecessary activities (in the context of the plant emergency) be halted and the equipment placed in the safe condition. Depending on the length of the event or the scope of the surveillance, termination of a surveillance test will result in either a suspension or indefinite suspension of the surveillance.

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- 2.30 **TEST COMPLETION NOTIFICATION (TCN):** Surveillance forms used to notify the Surveillance Scheduler of surveillance test performances in order to support database updates for the activity.
- 2.31 **TEST COORDINATOR:** The individual who has been assigned the responsibility of ensuring the test is completed or dispositioned, and who has the responsibility for the initial review of test data. Also can be referred to as TEST PERFORMER.
- 2.32 **TEST FAILURE:** The surveillance test is considered failed if the acceptance criteria is not satisfied. Test failure is also required if it is determined during the test that the acceptance criteria will not be met. Surveillance test acceptance criteria are often written using plant equipment to provide indication to avoid lifting leads or attaching electronic equipment to verify a signal. The shift supervisor has authority within the scope of this procedure (Reference step 6.5.2) to determine if the purpose and scope of the surveillance test is satisfied in the event that the indicating equipment becomes inoperable during the test performance.
- 2.33 **TEST PACKAGE:** Surveillance test procedure, test completion notification(s), and associated data package.

3.0 Responsibility

- 3.1 Each cognizant manager, or designee, is responsible for the following:
- 3.1.1 Assigning qualified personnel to perform test activities including developing and implementing test procedures and evaluating the reporting test results
 - 3.1.2 Ensuring the performance and evaluation of assigned surveillances tests in accordance with the surveillance program procedure requirements
 - 3.1.3 Writing and maintaining assigned surveillance procedures, as applicable
 - 3.1.4 Ensuring that sufficient resources are allocated to ensure timely completion of assigned surveillance tests when due
 - 3.1.5 Notifying the PSC in writing or by using the Condition Reporting Process whenever the DSC assignment is changed within their department
 - 3.1.6 Designating DSC(s) and Alternate(s) to perform duties as required by the Surveillance Program. Personnel will be designated in accordance with the requirements in Section 4.6.3 of this procedure to ensure continuity and integrity of the surveillance processes during transitional situations. (SPR 940498)
 - 3.1.7 Ensuring that test packages are accurate and acceptable following test completion by assigning personnel to perform the designated second review, in accordance with the requirements in section 6.6.2 and the guidelines listed in Addendum 1. (DR 87-81)

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- 3.2 Engineering management is responsible for the following:
- 3.2.1 Managing the Plant Surveillance Program,
 - 3.2.2 Assigning an individual to perform the responsibilities of the PSC,
 - 3.2.3 Assigning an individual or individuals to perform the responsibilities of the Surveillance Scheduler,
 - 3.2.4 Ensuring adequate resources and site coordination sufficient to maintain an efficient and effective surveillance program
- 3.3 The Plant Surveillance Coordinator (PSC) is responsible for the following:
- 3.3.1 Overall implementation of the Surveillance Program
 - 3.3.2 Assuring the integrity of the Surveillance Database by performing the following:
 - 3.3.2.1 Reviews focused on information used for scheduling purposes.
 - 3.3.2.2 Specifies the frequency and the Technical Specification reference number for each surveillance test
 - 3.3.2.3 Developing and maintaining the Surveillance Program Guide in accordance with procedure 0PAP01-ZA-0105, Department Instruction Guidelines.
 - 3.3.2.4 Ensuring surveillance tests are assigned a responsible division.
 - 3.3.2.5 Evaluation for impact and coordination of changes to the surveillance program in accordance with OPGP05-ZN-0004, Changes to Licensing Basis Documents and Amendments to the Operating License.
 - 3.3.3 Providing Technical direction to the activities performed by the Surveillance Scheduler(s).
 - 3.3.4 Verifying changes to test frequencies and ensuring correct rescheduling of surveillance tests after frequency changes have been made.
 - 3.3.5 Identifying training requirements for personnel performing Surveillance Program requirements
 - 3.3.6 Training new DSCs assigned by the Cognizant Manager in accordance with Section 4.6 of this procedure. (SPR 940498)

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- 3.4 The Surveillance Scheduler is responsible for the following:
- 3.4.1 Forwarding completed data packages to RMS for retention.
 - 3.4.2 Entering status updates from the divisions to keep the database current.
 - 3.4.3 Tracking test/data packages in Engineering
- 3.5 The DSC is responsible for the following:
- 3.5.1 Ensuring the integrity of their division's portion of the surveillance database, the focus of which SHALL include "derived" information such as plant condition modes, TPNS, remarks, etc
 - 3.5.2 Following surveillance test packages assigned to their department and:
 - 3.5.2.1 Printing or retrieving TCNs from the local printer to assemble test packages,
 - 3.5.2.2 Ensuring that the surveillance test package contains required documents prior to performance,
 - 3.5.2.3 Tracking the surveillance test package within their department,
 - 3.5.2.4 Ensuring that surveillance test packages held by their department are properly stored, and
 - 3.5.2.5 Verifying that all completed test results have been transmitted to RMS or to the Surveillance Scheduler in accordance with section 6.6 of this procedure.
 - 3.5.3 Ensuring that personnel in their department are familiar with the Plant Surveillance Program requirements,
 - 3.5.4 Changing and updating surveillance requirements for which the department has responsibility by providing to the PSC, in writing or using the Condition Reporting Process, the surveillance test information as defined in step 4.2.1,
 - 3.5.5 Periodically reviewing scheduled surveillance tests and ensuring that data packages are received by the Test Coordinator prior to the scheduled start date (SPR 880031, LER 88-011).
 - 3.5.6 Ensuring that conditional surveillances are performed and documented in the surveillance database.
 - 3.5.7 Ensuring that the Technical Specification Staggered Test requirements are being satisfied for surveillance requirements assigned to their department, (SPR 940498) and

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3.5.8 Developing and maintaining the Divisional Surveillance Guide in accordance with procedure 0PAP01-ZA-0105, Department Instruction Guidelines. (SPR 940498)

3.6 The Test Coordinator is responsible for the following:

3.6.1 Completing the surveillance test using the latest approved revision of the surveillance procedure and in accordance with site expectations for procedural use and control,

3.6.2 Notifying the Shift Supervisor when surveillance tests are suspended, failed or completed,

3.6.3 Completing the Test Completion Notification and forwarding to the Surveillance Scheduler, and

3.6.4 IF revised or additional data sheets have been incorporated into the test package, THEN the Test Coordinator SHALL provide an explanation for the revised data sheets in the test package and change the pagination of the test package as required to reflect the additional data sheets. Refer to Addendum 1, Item 2E for additional guidance. (IR 89-028).

3.7 The Information Technology Manager is responsible for the following:

3.7.1 Development and maintenance the computer code for the Surveillance Database application in the plant computer.

3.7.2 Ensuring that reports are generated as requested by the PSC and DSCs including emailed reports and distribution of TCNs to designated printers

3.8 The Director of RMS and Administration is responsible for the following:

3.8.1 Providing storage and retrieval services for surveillance test packages transmitted to the Records Management System (RMS).

4.0 Surveillance Database

4.1 Surveillance Database Description

4.1.1 The surveillance database identifies surveillance requirements from the Technical Specifications, Technical Requirements Manual, and Off-Site Dose Calculation Manual and assigns each requirement with a Tech Spec Code.

4.1.2 The Tech Spec Codes in the database reflect the same numbering system used in the Technical Specifications. Addendum 3 provides details on the surveillance numbering system for situations when the requirements are in tabular format in the Specifications.

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- 4.1.3 As a minimum, a surveillance test (ST) is generated for each surveillance requirement in the Technical Specifications. Where requirements are logically grouped together or tested with the same procedure, tests are combined for efficiency.
- 4.1.4 Additional tests are created to allow separate scheduling of individual trains associated with a surveillance requirement to minimize potential for multiple trains being out of service simultaneously and to facilitate test completion.
- 4.1.5 Additional tests are created when partial performance in separate procedures is necessary to complete the entire surveillance requirement. (For example, response time testing includes actuation and logic testing as well as component actuation that may not be capable of being performed at the same time due to plant restrictions.)
- 4.1.6 The implementing surveillance procedure and test frequency are identified for each surveillance test to ensure that surveillance activities are scheduled and performed in compliance with the Technical Specifications.
- 4.1.7 The database provides the surveillance due date based on a test interval that meets or exceeds the test frequency required by the Technical Specifications. The late finish date (or Dead Date) for each surveillance test is also calculated in accordance with the grace period allowances in Technical Specification 4.0.2.
- 4.1.8 The function of the surveillance database is to ensure compliance with Technical Specification surveillance requirements by listing the requirements and scheduling these requirements in accordance with the specified frequencies.
- 4.1.9 Functions NOT provided by the surveillance database include:
- 4.1.9.1 Identifying failed surveillance tests,
 - 4.1.9.2 Providing component test trending,
 - 4.1.9.3 Tracking out of service conditions resulting from failed surveillance testing, and
 - 4.1.9.4 Return to service testing history
 - 4.1.9.5 Tracking of surveillance testing that is not performed for surveillance credit
- 4.1.10 Although the surveillance database provides operability testing requirements as identified in the Technical Specifications, the database was not specifically designed to identify functionality testing requirements following maintenance activities.

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- 4.1.11 The surveillance database is an application in the Oracle computer system. Changes to the program code are performed by the Information Technology department program analyst and are controlled in accordance with the Software Quality Assurance procedure, OPGP07-ZA-0014.

4.2 Surveillance Database Development and Maintenance

- 4.2.1 The performing division DSC is required to submit to the PSC, as a minimum, the following information.
- 4.2.1.1 Procedure Number and Procedure Writer Group,
 - 4.2.1.2 Technical Specification Reference Number,
 - 4.2.1.3 Applicability Mode for the surveillance requirement,
 - 4.2.1.4 Plant Condition Mode needed for test performance,
 - 4.2.1.5 Surveillance Description,
 - 4.2.1.6 Special Conditions required for the test,
 - 4.2.1.7 Any remarks deemed appropriate, and
 - 4.2.1.8 TAG/TPNS equipment numbers, as applicable.
- 4.2.2 After review of the information provided, then the PSC or designee enters it into the Surveillance Database.
- 4.2.3 The PSC SHALL review the information after it has been entered into the Surveillance Database, and also enter required frequency from the Technical Specification. The PSC SHALL retain a copy of the change request documentation used in step 4.2.1.
- 4.2.4 Additions of new surveillance tests to the surveillance database as a result of new or revised procedures are to be identified by the DSC of the performing division.
- 4.2.5 Changes to the surveillance database (i.e. test frequency, procedure number, etc.) for any existing surveillance item may be requested. Use of the Condition Reporting Process is acceptable and recommended for requesting and tracking changes to the ST database. The request may also be in the form of electronic mail, memo (e.g. Form STP 67) or the Sample Surveillance Input and Change Request Form (See Form 1).
- 4.2.5.1 Surveillance procedure writers SHALL directly notify the PSC when their procedure revision affects the ST database as identified by the Procedure Technical Review Checklist (OPAP01-ZA-0102-4). Electronic mail may be used for this notification and the DSC SHALL also be included in the distribution.

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- 4.2.6 The PSC SHALL review the revised information to ensure compliance with Technical Specification surveillance requirements.
- 4.2.7 Surveillance Test information, such as periodicity, implementation date, and special conditions, if any, will be determined by the PSC. This information will be entered into the scheduling program by the PSC. Changes to surveillance scheduling program periodicities SHALL be reviewed by the PSC.
- 4.2.8 When this review is completed, then the revised information SHALL be entered into the Surveillance Database and the surveillance item rescheduled by the PSC or designee, if required.
- 4.3 Licensing Change Impact to Surveillance Database
- 4.3.1 Changes to Technical Specification requirements SHALL be evaluated for impact to the surveillance procedures and surveillance database in accordance with OPGP05-ZN-0004, Changes to Licensing Basis Documents and Amendments to the Operating License. It is the responsibility of the PSC to coordinate the impact assessment and revise the surveillance database.
- 4.3.2 Additions of new surveillance tests to the surveillance database as a result of new or revised Technical Specification requirements are to be identified by impact assessments performed by the PSC and applicable performing divisions.
- 4.3.3 The changes to the surveillance database are implemented for these changes as directed in steps 4.2.5 through 4.2.8, as applicable.
- 4.4 Surveillance Database Security
- 4.4.1 The PSC SHALL be responsible for surveillance database security. The PSC will determine appropriate levels of access to the database required by user groups and identify work roles which will control the data and functions of the database.
- 4.4.2 The work roles are assigned to users to allow access to the database while maintaining database security.
- 4.4.3 Access will be granted to the Surveillance Database after approval by the PSC acting as the application sponsor for the surveillance test application in the plant computer.

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4.5 Business Continuation Plan

4.5.1 Short Duration Computer Down Time

- 4.5.1.1 IF the computer is returned to service within a week, THEN the Surveillance Scheduler SHALL ensure that completed surveillance tests are updated in the database in a timely manner.

4.5.2 Long Duration Computer Down Time

- 4.5.2.1 IF the computer will be out of service for a period of time greater than one week, THEN the responsible performing division SHALL ensure upcoming tasks are being performed in accordance with the authorized work schedule.
- 4.5.2.2 The Oracle computer system, which includes the Surveillance Database application, is backed up every night. In the event of a disruption of computer resources, the Business Continuation Plan allows for the restoration of the Surveillance database from the tape backup.
- 4.5.2.3 When the computer becomes operable, the Surveillance Scheduler SHALL update the Database in a timely manner.

4.6 Surveillance Guidelines

- 4.6.1 The PSC SHALL maintain the program guide TEG-0002, Surveillance Program Guide. Engineering management SHALL be the approval authority for the program guide.
- 4.6.1.1 The program guide will be used to instruct personnel assigned to perform the duties of PSC and DSC positions.
- 4.6.1.2 New DSCs SHALL demonstrate knowledge of the program guide requirements and divisional surveillance guide requirements.
- 4.6.1.3 The Cognizant Manager SHALL approve the designee for the DSC position based on verification of surveillance program knowledge prior to assuming the responsibilities as the DSC.
- 4.6.1.4 The PSC SHALL train the designee for the DSC position prior to the designee assuming ownership of the division's surveillance requirements.
- 4.6.2 The DSCs SHALL maintain a Divisional Surveillance Guide (division guide). The Cognizant Manager, or designee, SHALL be the approval authority.

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4.6.2.1 The division guide will describe activities performed by the DSC that are specific to their divisional requirements within the Surveillance Program requirements.

4.6.2.2 PSC will also review and comment on material included in the division guide.

4.6.3 The Cognizant Manager SHALL designate, as a minimum, one alternate DSC, which must also demonstrate knowledge of the program guide and division guide requirements. The Cognizant Manager and PSC SHALL approve personnel performing the duties of the DSC as alternates in the same manner as the primary DSC.

4.7 Surveillance Database Assessments

4.7.1 The PSC SHALL perform surveillance database self-assessments, as needed, to ensure that Technical Specification surveillance commitments have been scheduled on the correct frequency.

4.7.2 The PSC SHALL document the results of the database self-assessments utilizing the Condition Reporting Process.

5.0 Surveillance Test Scheduling

5.1 Surveillance Database Scheduling Support

5.1.1 Surveillance test (ST) frequencies in the surveillance database meet or exceed the requirements of the Technical Specifications.

5.1.2 Calculation of the next due date and drop dead date for STs on the database frequencies ensures proper scheduling of surveillance test activities in compliance with the surveillance interval requirements of the Technical Specifications.

5.1.2.1 ST frequency codes are maintained by the PSC in the surveillance database. The frequency code table includes numerical values to support the calculations performed by the surveillance database program computer code.

5.1.2.2 Train-based frequencies (identified with the letter T before the frequency) are used to support consistent scheduling within the 12-week schedule matrix.

- a. A technical discussion of surveillance test frequencies is located in the Test Engineering Guide, TEG-0002, titled Surveillance Program Guide.

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- 5.1.2.3 Performance-based frequencies are used to support longer test intervals and STs that are not train related. Most outage related STs include performance-based test frequencies.
- 5.1.3 Program reports are generated by the surveillance database to identify STs that have exceeded their due date or have reached the end of their grace period.
 - 5.1.3.1 Program reports are scheduled to be run on a periodic basis by PSC.
 - 5.1.3.2 Program reports are printed to local printers or may be emailed directly to the DSC or other personnel, as needed.
 - 5.1.3.3 The Dead Today report identifies STs that have reached the end of the grace period and must be performed immediately or LCO actions may be required.
 - 5.1.3.4 Surveillance program reports may also be run manually in the computer system by any individual requiring the information.
 - a. More detailed information on surveillance reports is located in the TEG-0002, Surveillance Program Guide.
- 5.1.4 Surveillance database codes are assigned to each surveillance test (ST) which provides information to support determination of the STs scheduling window.
 - 5.1.4.1 These codes include: Train, primary TagTPNS, PCMode, AMode, Special Purpose, Condition Codes, and Mode Codes.
 - a. A discussion of surveillance codes and their use is located in TEG-0002, Surveillance Program Guide.
- 5.2 Surveillance Scheduling General Requirements
 - 5.2.1 IF the PSC approves a revision to the Surveillance Database for a surveillance test which has been scheduled, THEN the PSC SHALL determine if re-issuance of the surveillance schedule sheet and TCN are required.
 - 5.2.1.1 The PSC SHALL notify the DSC of the change and ensure that the revised schedule sheet and TCN are re-printed, if required.
 - 5.2.2 Scheduled surveillance tests SHALL be maintained as described in the following steps:
 - 5.2.2.1 Each periodic ST in the database SHALL have at least one Work Activity Number (WAN) assigned.
 - 5.2.2.2 Additional WANs are generated for STs by the surveillance database approximately 1 year prior to the due date.

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- 5.2.2.3 When the computer is updated with a completion date, then a new due date and drop dead date SHALL be computed automatically and stored. All subsequent surveillance reports will reflect this updated information.
- 5.2.2.4 Whenever a surveillance test has not been performed due to the plant mode, then the performance of the ST prior to re-entering the mode where it is applicable SHALL be considered the first surveillance performance when the software program determines the grace period.
- 5.2.3 The Surveillance database automatically updates the WAN to status 50 whenever the TCNs are printed.
- 5.2.4 The Surveillance Scheduler SHALL update the Surveillance Database as a minimum, when:
- 5.2.4.1 The completed Test Completion Notification is received.
- 5.2.4.2 The completed Test Package is submitted to RMS.
- 5.2.5 The surveillance database does not schedule STs with short frequencies (one week or less).
- 5.2.5.1 For surveillance tests with short periodicities (one week or less), the test data MAY be recorded in daily logs. The logs SHALL be subject to the same second party review as described in Step 6.6.2. In such cases the acceptance criteria SHALL be identified in the logs.
- 5.2.5.2 Surveillances with a frequency of train weekly (TW) are scheduled in the surveillance database.
- 5.2.6 The potential for preconditioning activities, such as routinely performed preventive maintenance work orders or other schedule work, should be evaluated when scheduling surveillance tests. Addendum 6, Preconditioning Guidelines, provides guidance on preconditioning issues.
- 5.3 On-line Surveillance Scheduling
- 5.3.1 Surveillance database parameters, codes and due dates SHALL be used by performing divisions to develop the on-line surveillance schedule.

NOTE

The 25% grace period is not intended to be used repeatedly as a convenience to extend surveillance intervals beyond that specified, in accordance with the basis of Technical Specification 4.0.2.

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- 5.3.2 Projected start dates identified for STs in the authorized work schedule should be on or before the due date, if possible. Use of grace is acceptable when conditions require adjustments to the schedule.
- 5.3.3 Train-related surveillance tests SHALL be identified in the 12-week schedule format.
- 5.3.3.1 The 12-week schedule is used to prevent cross train surveillance testing and to ensure that staggered testing requirements are maintained in compliance with the Technical Specifications.
- 5.3.4 Surveillance tests that are not train-related SHALL be identified within the train work weeks based on their relationship to the functional equipment groups listed in WCG-0002, where appropriate.
- 5.3.5 Performing divisions should coordinate with integrated work management to identify of the correct work week for surveillances that do not meet the above criteria.
- 5.3.5.1 The DSC should identify the same plant configuration agreed upon in the previous step for future test windows.
- 5.3.5.2 Scheduling constraints should be identified in the remarks section of the surveillance to display in the authorized work schedule.
- 5.4 Work Control Interface
- 5.4.1 The authorized work schedule is maintained in software external to the surveillance and work order applications on the plant computer.
- 5.4.2 Work scope is identified to the schedule in accordance with the Work Process Program, OPGP03-ZA-0090.
- 5.4.3 Surveillance scope should be identified by the DSC in support of the on-line work week planning and scheduling process.
- 5.5 Conditional Surveillances
- 5.5.1 Surveillance tests with weekly or shorter frequencies AND conditional tests SHALL be scheduled by the performing division.
- 5.5.1.1 WHEN the performance of a conditional surveillance is determined to be required, then the DSC or test performer SHALL obtain the implementing surveillance procedure and verify the correct revision and any amendments (i.e. Field Changes). This requirement is also applicable to all surveillance tests.

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- 5.5.1.2 WHEN conditions are satisfied which require the performance of a conditional surveillance, the DSC SHALL ensure that the surveillance is performed and properly recorded in the surveillance database by submitting a completed TCN to the Surveillance Scheduler. Surveillances associated with Control Room Logs and conditional/periodic surveillances with test frequencies of 72 hours or less are exempt from this requirement. (Audit Report 90-06)
- 5.5.2 Whenever practical, performing divisions should identify conditional surveillance requirements in procedures that will be used when the specific condition is expected.
- 5.6 Refueling Outage Surveillance Scheduling
- 5.6.1 Outage surveillance test scope SHALL be identified before the scope freeze date in accordance with the Work Management Process.
- 5.6.2 Surveillance test scope is identified by the DSCs for refueling outages.
- 5.6.3 Surveillance work activity numbers SHALL be designated as potential outage scope by use of the outage indicator.
- 5.6.4 Normal outage related surveillance activities are identified in the surveillance database by use of condition codes or the special purpose field.
- 5.6.5 DSCs SHALL confirm any long interval surveillances that can only be performed in shutdown plant modes will not drop dead before the next refueling outage. Otherwise, the surveillance SHALL be scheduled in the refueling outage.
- 5.6.5.1 Use of the Mode Change Checklist with an end date equal to the start date of the following refueling outage will provide surveillance that should be considered for outage scope.

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6.0 Surveillance Testing Implementation

6.1 Surveillance Procedures

- 6.1.1 Plant Surveillance Procedures are usually contained in the PSP volume of the Plant Procedure Manual, however, other approved procedures MAY be used to perform surveillance tests IF the following criteria are satisfied:
- 6.1.1.1 Procedure is listed in the surveillance database as satisfying a surveillance requirement.
 - 6.1.1.2 Procedure meets the requirements of 0PAP01-ZA-0101, Plant Procedure Writer's Guide for the purpose and scope, documentation, and reference sections.
 - 6.1.1.3 Procedure meets the retention requirements of the Operations Quality Assurance Plan, Chapter 14, Section 11.
- 6.1.2 Preparation and Revision of Surveillance Procedures
- 6.1.2.1 Preparation and revision of surveillance procedures is the responsibility of the manager identified in the procedure index. Format and content requirements, as well as review, approval, and revision requirements are contained in 0PAP01-ZA-0102, "Plant Procedures". Additional requirements and guidelines are contained in 0PAP01-ZA-0101, Plant Procedures Writer's Guide.
 - 6.1.2.2 Surveillance procedures shall include acceptance criteria. The acceptance criteria should be Pass-Fail, in every case practical, to allow immediate determination of surveillance test acceptance or failure by the test coordinator.
 - 6.1.2.3 Surveillance procedures SHALL have instructions for the Test Coordinator to immediately notify the Shift Supervisor if there is a surveillance test failure.
- 6.1.3 Routing requirements for review of the test packages SHALL be specified on the Data Package Cover Sheet.

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6.2 Preparation and Distribution of Test Packages

NOTE

Surveillance tests with weekly or shorter frequencies and conditional tests SHALL be scheduled by the performing division.

- 6.2.1 The surveillance test Schedule Sheet and TCN for scheduled surveillances are sent to the DSC prior to the early start date. TCNs are not sent if the ST is already in status 50, which indicates that the TCN has already been printed.
- 6.2.2 The DSC SHALL collect the Surveillance Test Schedule Sheets and Test Completion Notification Sheets (TCNs) from a local printer for assembly of Test Packages.
- 6.2.3 The TCNs should be distributed to the performing division at least one (1) week prior to the surveillance test due date.
 - 6.2.3.1 The DSCs may print the TCNs to support scheduled activities, as needed.
- 6.2.4 Surveillance test package preparation SHALL be performed to support the work control process.
- 6.2.5 Prior to test performance, the performing division SHALL assemble the initial Test Packages in folders (Red folders, Unit 1 - Green folders, Unit 2) which include the following:
 - 6.2.5.1 Surveillance test procedure text.
 - 6.2.5.2 Surveillance test data package, if applicable.
 - 6.2.5.3 Surveillance Test Schedule Sheet. (not required for surveillance logs)
 - 6.2.5.4 Surveillance TCN. (not required for surveillance logs)
- 6.2.6 The Schedule Sheet and TCN should be included in the conditional surveillance test package.
- 6.2.7 For surveillance tests with weekly or shorter periodicities, the test procedure MAY be maintained in the control room, laboratory, shop, office or watch station, with only the data package in the test package folder. The performing Division SHALL ensure that the correct revision and amendments are used for the surveillance test.
 - 6.2.7.1 IF a "Controlled Copy" is not available, THEN the DSC can verify the latest revision of the procedures in accordance with the requirements of OPGP03-ZA-0010, Performing and Verifying Station Activities

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6.3 Surveillance Test Performance

- 6.3.1 Procedure OPGP03-ZA-0010, Performing and Verifying Station Activities, requires that procedure revisions be verified before work start.
- 6.3.2 The performing division as identified in the surveillance database SHALL ensure that surveillances are satisfactorily completed as scheduled or ensure that the appropriate alternative action (i.e. rescheduling) is taken.
- 6.3.3 IF a surveillance test cannot be performed prior to or on the due date, THEN the test may be delayed up to the end of the grace period (drop dead date).
- 6.3.4 The performing division may retain the test package until the test can be completed satisfactorily.
- 6.3.5 IF the grace period for a surveillance test expires prior to completion of the surveillance test, THEN the performing Division Manager or designee SHALL inform the Shift Supervisor, and other management personnel as appropriate.
- 6.3.6 The Surveillance TCN SHALL be returned to the Surveillance Scheduler if the surveillance test cannot be performed by the drop dead date due to plant condition or equipment availability.
- 6.3.6.1 On the returned TCN, describe the reason why the test is not being performed.
- 6.3.6.2 Provide an anticipated "Next Due Date" if known, to support rescheduling of the surveillance requirement.
- 6.3.7 IF a surveillance test is conducted as a post-maintenance test, THEN the responsible division, with input from the DSC, SHALL determine if surveillance credit should be taken.
- 6.3.8 IF surveillance credit is taken, THEN the performing division SHALL notify the Surveillance Scheduler to update the Database by obtaining and submitting the TCN. The DSC may use a generic TCN form similar to the sample Form 2 for this notification.
- 6.3.9 The performing division SHALL adhere to the work execution requirements and expectations in the work control process per OPGP03-ZA-0090 for surveillance activities.
- 6.3.10 The surveillance test coordinator SHALL obtain work start in accordance with the work control process.
- 6.3.10.1 The Work Start Authority SHALL log the surveillance in the logbook.
- 6.3.10.2 Exceptions to 6.3.10 are allowed in the case of routine sampling and analyses.

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- 6.3.10.3 All surveillance procedures that can be performed in Mode 6 MAY also be performed when the core is offloaded to the spent fuel pool, unless a prerequisite condition makes the surveillance performance impossible, as determined by the Work Start Authority.
- 6.3.11 IF a surveillance test is to be partially performed, THEN the portions of the data sheets that are not used SHALL be marked appropriately. However, IF the test is to be performed to credit a periodic surveillance test requirement, THEN the complete test SHOULD be performed to facilitate the administrative scheduling of surveillance tests (i.e. ensure that at least one surveillance database line item is satisfied).
- 6.3.11.1 Partial performance of a procedure for periodic surveillance credit is allowed when the “Surv Scope” is identified on the Schedule Sheet and TCN. (See “Addendum 5, Example document for displaying Surv Scope field”) IF the procedure is not performed in its entirety due to the “Surv Scope” identified on Schedule Sheet and TCN, THEN actions in Step 6.3.11.2 are not required. Unused sections of the procedure may be discarded as described in steps 6.3.12.1 and 6.3.12.2
- 6.3.11.2 IF a periodic test for surveillance credit is not performed in its entirety, THEN
- Clearly annotate the surveillance procedure to describe what was completed and what was not performed,
 - Notify the DSC to reschedule the uncompleted portion of the test.
 - Enter the untested components in the OAS if not completed by the end of the grace period.
- 6.3.12 IF the surveillance test is not being performed for a periodic surveillance requirement and the procedure is to be partially performed (for example, post maintenance testing for valves), THEN retention of the entire procedure is not required.
- 6.3.12.1 The test performer SHALL clearly document in the test package (e.g. remarks) which test procedure sections are required.
- 6.3.12.2 The test performer may discard the procedure pages that will not be retained.
- 6.3.13 After completing a surveillance test, the Test Coordinator SHALL:
- 6.3.13.1 Determine whether or not the Acceptance Criteria were satisfied.

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- 6.3.13.2 Immediately notify the Shift Supervisor if the Acceptance Criteria are not met for any part of a surveillance test.
- 6.3.13.3 Check for legibility, accuracy, and completeness.
(See Addendum 1)
- 6.3.13.4 Sign the data package cover sheet for review of the test data.
- 6.3.13.5 Ensure that the surveillance has been logged as complete by the Work Start Authority.
- 6.3.14 The Test Coordinator SHALL indicate satisfactory test completion in the data package and on the TCN. The surveillance test completion date is the date that the Test Coordinator signs on the surveillance package indicating that the acceptance criteria has been satisfied per step 6.3.13.1. The Test Coordinator SHALL use this date on the surveillance TCN form. The test completion date SHALL be used for determining the schedule dates for the surveillance item's next performance. (SPR 900254)
 - 6.3.14.1 IF the test performance takes up to a week with acceptance criteria being satisfied early in the test, THEN the start date will be indicated on the TCN and be used to determine the next due date for performance-based frequency surveillances.
 - 6.3.14.2 In special cases, such as surveillance credit packages, the PSC SHALL determine the required test completion date as follows:
 - a. Test completion date SHALL be selected to ensure conservative scheduling of the next surveillance test requirement.
 - b. Test completion date SHALL be clearly identified on the quality record transmitted to RMS.
 - c. Surveillance database SHALL be updated using the test completion date determined by the PSC.
 - d. Basis for the test completion date SHALL be included in the status comments field of the associated ST WAN.

NOTE

IF the surveillance test contains multiple constituents (e.g. Valve operability tests, remote position indication tests, sealed source leak tests, etc.), THEN special scheduling instructions will be required to ensure that all constituents associated with the surveillance remain within the required surveillance test interval (LER 1-90-010).

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- 6.3.15 The surveillance TCN SHALL be placed in the Surveillance Box for routing to the Surveillance Scheduler. The TCN may also be given directly to someone performing the role of the Surveillance Scheduler to update the surveillance test in the database.
- 6.3.16 Upon completion of a satisfactory surveillance test, the Test Coordinator SHALL notify the work start authority concerning the following:
- 6.3.16.1 Test, system or component status.
 - 6.3.16.2 Acceptance criteria were satisfied.
 - 6.3.16.3 Logging the surveillance complete.
- 6.3.17 IF a surveillance test was not completed satisfactorily, THEN the Cognizant Manager, or designee, is responsible for ensuring the initiation of required corrective actions, retesting, and completion of unfinished portions of the surveillance test.
- 6.3.17.1 Refer to procedure section 6.4 for specific requirements for test suspensions and indefinite suspensions.

NOTE

Retain the original Data Package with any subsequent Data Packages used during retesting.

- 6.3.18 IF the results of a surveillance test are unsatisfactory, THEN the Test Coordinator SHALL immediately notify the Shift Supervisor. The following actions SHALL be taken, as appropriate:
- 6.3.18.1 Refer to procedure section 6.5 for specific requirements for surveillance test failures.
- 6.3.19 The responsible division SHALL ensure that the surveillance data package originals are routed through the surveillance scheduler and that any other pertinent documents are referenced (i.e., CRs, etc.).

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6.4 Surveillance Test Interruptions

6.4.1 Suspension of a Surveillance Test

- 6.4.1.1 IF there is an unexpected interruption of the surveillance test, and the unexpected interruption extends beyond a shift change, THEN the test **SHOULD** be considered suspended.
- 6.4.1.2 Surveillance tests **MAY** be suspended in accordance with the guidelines in Addendum 2.
- 6.4.1.3 To suspend a surveillance test the following actions are required:
- The test coordinator notifies the Shift Supervisor that the surveillance activities have temporarily ceased, the reason for ceasing the surveillance test, and the expected time for recommencing the surveillance test.
 - The test coordinator informs the Shift Supervisor of any changes in system/equipment configuration, response, actuation, etc. that have been affected by the surveillance activities performed thus far (e.g. instrumentation channels left in a tripped condition; pump/valves altered with respect to lineup, control, loss of function, etc.) (SPR# 890328).
 - The test coordinator **SHALL** ensure that the plant equipment being tested is left in a safe condition, and any test equipment is removed or verified to not be endangering personnel or permanent plant equipment.
 - The test coordinator **SHALL** note the AS LEFT condition in the test package.
 - IF the surveillance test has been suspended, THEN the test coordinator **SHALL** so state in the data package (OMR 85-266).

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- f. Before resuming testing, appropriate corrective measures SHALL be taken and noted in the test data package by the test performer. These measures MAY include corrective maintenance of the plant equipment being tested, repair or verification of test equipment operability, completion of removal of test equipment which has become partially detached, changes to the test procedure IF in error or to prevent future personnel errors, and verifying that any other conditions causing test suspension have been corrected completely or will not impact test performance (e.g. termination of a plant emergency, completion of shift change, removal of injured personnel from the test area, and removal of any hazards preventing testing).
- g. Prior to continuing the surveillance test, all applicable test prerequisites SHALL be re-verified.
- h. Test Coordinator SHALL recommence test at a point agreeable to both the test coordinator and the Work Start Authority.
- i. The test coordinator SHALL document in the test data package where the test was resumed and the reason that starting point was chosen.
- j. It is the responsibility of the test coordinator to ensure that the prerequisites to the test performance are still valid, and that the total testing scope is completed.
- k. IF the test is to be started over at the beginning or at any other point before the step where testing was suspended, THEN the test data package for the suspended test SHALL be attached to a new test data package to be completed from the point where testing is resumed.

NOTE

IF the prerequisites for a surveillance test cannot be reverified due to the nature of its prerequisites, THEN the associated surveillance test can only be indefinitely suspended.

6.4.2 Indefinite Suspension of a Surveillance Test

- 6.4.2.1 The requirements of Step 6.4.1.3 SHALL be adhered to except for those portions that are associated with recommencing the surveillance test (SPR# 890328).
- 6.4.2.2 The Shift Supervisor SHALL review and sign the surveillance test package to concur with the intent to indefinitely suspend the test.

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6.4.2.3 Once conditions permit performance of a surveillance which has been indefinitely suspended, a new surveillance test package will be generated. The surveillance test's prerequisites will be reestablished and all subsequent test activities performed in accordance with the surveillance test procedure.

6.4.3 Surveillance tests, which have been indefinitely suspended are returned to the Surveillance Scheduler to be transmitted to RMS.

6.5 Surveillance Test Failure

6.5.1 IF the Surveillance test is considered failed, THEN:

6.5.1.1 The Test Coordinator SHALL immediately notify the Shift Supervisor.

6.5.1.2 The Test Coordinator SHALL document what acceptance criteria was not satisfied in the test package.

6.5.1.3 The Shift Supervisor SHALL determine equipment operability status, reportability requirements, and LCO action entry requirements, as applicable. The time and date of discovery of the failure and operability status SHALL be documented on the Procedure Performance Data Sheet or Data Package Cover Sheet.

6.5.1.4 The Test Coordinator SHALL ensure that a Condition Report (CR) is initiated for the failure.

- a. The CR SHALL have the tracking event code 4CC assigned designating that it was initiated by a failed surveillance and the appropriate material deficiency event code.
- b. After the CR work is completed, Engineering SHALL enter the CR into history as required by the Equipment History Program and should indicate that the failure was detected by surveillance testing.
- c. Engineering SHALL also evaluate the CR for Maintenance Rule applicability.

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NOTE

- IF the surveillance procedure acceptance criteria requires the operability of plant equipment as an indication of the acceptance criteria, but the indicating equipment is not specifically a part of the test purpose and scope, THEN the failure of the indicating component to operate and satisfy the acceptance criteria does not automatically cause the test to be considered failed. The Shift Supervisor should follow step 6.5.2.1, as appropriate.
- Surveillance tests often determine operability for multiple components that are tested in different sections of the procedure or have separate acceptance criteria. Individually, components that fail may be placed in the OAS and the surveillance test will be administratively considered complete to allow scheduling of the next test by the surveillance program.

6.5.2 IF surveillance test results are unsatisfactory or do not meet the acceptance criteria, as specified by the surveillance procedure, THEN the test performer SHALL notify the Shift Supervisor immediately. The Shift Supervisor SHALL take LCO actions as determined necessary based on the test result. The Shift Supervisor may use the above note or Addendum 2 to determine the acceptability of the test and required actions.

6.5.2.1 IF during the surveillance test, a situation occurs that results in the failure of the equipment providing indication of the test acceptance criteria or a test result does not provide clear determination of the test acceptability, THEN evaluate and proceed as follows as necessary:

- a. Test procedural guidance should be followed if applicable to the situation that has occurred. (Example, test prerequisites and precautions may direct the performer to suspend the test if a reactor trip occurs)
- b. Determine the cause for the unsatisfactory result. IF the cause is due to the failure of the equipment being tested (based on the purpose and scope of the test), THEN the test is failed and test performer SHALL proceed per step 6.5.1.
- c. IF the cause of the unsatisfactory result is due to equipment or events not associated with the purpose and scope of the test, THEN the test may be suspended and test performer may proceed per step 6.4.1 or 6.4.2, as applicable.

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- d. IF the situation is the result of a deficiency, not associated with the purpose and scope of the test that can be corrected by operator action, THEN the appropriate action should be taken as directed by the shift supervisor including troubleshooting instructions, if needed.
- e. In all cases the cause of the deficiency **SHALL** be clearly understood and documented in the test package (e.g. remarks) before the test is continued. CR 96-622
- f. The shift supervisor **SHALL** consider whether an operability issue is involved and an entry made in the OAS during the time the testing deficiency is being resolved.
- g. IF during the resolution of the deficiency it is determined that the tested equipment (based on the purpose and scope of the test) was the cause of the problem, THEN the test **SHALL** be declared failed.

6.5.2.2 During surveillance testing which involves multiple subcomponents which, if failed, could not be placed in an OAS for tracking (i.e. NLL cards in loop calibrations), then the test **MAY** be suspended in accordance with paragraph 6.4.1.2. The failed component must be declared inoperable and entered into the OAS until surveillance testing on that component is completed satisfactorily. (SPR 933553)

NOTE

Some surveillance procedures test components in multiple trains so that if more than one failure occurs then the plant could be required to enter a shutdown action statement. For example, some penetrations have both containment isolation valves stroke time tested in the same procedure. The surveillance test should be completed as much as possible so that the surveillance can be administratively considered complete to allow scheduling of the next test by the surveillance program.

- 6.5.2.3 IF following the failure of a component during a surveillance test, it becomes undesirable to test other components, THEN the following actions are required:
- a. Complete applicable requirements of section 6.5 and steps 6.6.1 through 6.6.4.
 - b. Verify untested components are in its fail-safe condition.

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- c. Enter untested components in the Operability Assessment System and identify the end of grace period for the surveillance. After this date the untested component(s) SHALL be declared inoperable in accordance with Technical Specification 4.0.3.

6.6 Surveillance Test Results and Review

NOTE

The surveillance test data package and any other approvals, step performance acknowledgments, data, etc. contained in the surveillance procedure comprise the documentation which is required to comply with the controls of OPGP07-ZA-0001, "Records Management."

- 6.6.1 WHEN the surveillance test is complete in accordance with Step 6.3.14, the controls of OPGP07-ZA-0001, "Records Management" for the protection and storage of in-process and completed records SHALL apply.

NOTE

- The designated second review is required by the surveillance program to assure that all acceptance criteria are satisfied and that the surveillance test package meets documentation requirements prior to transmittal to RMS. The designated second review SHALL be performed by a knowledgeable individual (such as a Shift Supervisor, DSC, program owner, supervisor, or designee from the performing section responsible for the test performance). Step 6.6.2 provides detailed requirements for the second review in addition to the review requirements stated in Addendum 1. The surveillance procedure SHALL include a signature block for this second review requirement.
- IF any subsequent reviews determine that the surveillance test was not satisfactorily completed, THEN the performing division SHALL inform the Surveillance Scheduler in addition to the requirements specified in the Surveillance Program Procedure, OPGP03-ZE-0004.

- 6.6.2 A second review of the surveillance test SHALL be performed by a knowledgeable individual. The second review SHALL be performed as follows:

- 6.6.2.1 Reviewer SHALL sign for performing a review of the Data Package making a determination of whether or not the Acceptance Criteria were satisfied.

- 6.6.2.2 IF this second review, or any additional review, reveals that test results previously judged to have satisfied the Acceptance Criteria have in fact NOT satisfied the Acceptance Criteria, THEN:

- a. The Shift Supervisor SHALL be immediately notified.

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- b. The notification of the Shift Supervisor SHALL be documented in the test package per step 6.5.1.
 - c. The second reviewer SHALL ensure a Condition Report is initiated in accordance with OPGP03-ZX-0002, if appropriate.
- 6.6.2.3 The designated second reviewer or other knowledgeable individual in the performing section's organization SHALL:
- a. Review the Data Package for legibility, accuracy, traceability, and completeness.
 - b. Verify that a Condition Report has been initiated for any component that failed to satisfy the acceptance criteria.
 - c. Ensure that any Condition Report initiated during the surveillance test is documented on the Procedure Performance Data Sheet.
- 6.6.2.4 When reviewing Surveillance Calibration procedures (PSP05s), IF the "As Found" data is out of tolerance, THEN the following steps SHALL be performed. (NOV 94-05) (SPR 940212)
- a. Initiate a CNAQ action per OPGP03-ZX-0002, to have the Cognizant System Engineer perform an Out of Tolerance Evaluation on the affected instrument(s). The action should have a due date 45 days from the date of Out of Tolerance was discovered.
 - b. Forward a copy of the Out of Tolerance data sheet(s) AND completed Form 1 from procedure OPGP03-ZM-0016 as a cover sheet to the Cognizant System Engineer.
 - c. Record the CR# and Action # on the Procedure Performance Data Sheet of the surveillance package.
- 6.6.2.5 IF during the performance of the surveillance any out of tolerance condition was adjusted back in tolerance in accordance with the instructions of the surveillance procedure (PSP02s, PSP06s and PSP14s), THEN the following steps SHALL be performed.
- a. Initiate a CNAQ action per OPGP03-ZX-0002, to have System Engineering perform a Maintenance Rule Evaluation on the affected instrument(s). The action should have a due date 45 days from the date of surveillance performance.

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- b. Forward a copy of the Out of Tolerance data sheet(s) AND completed Form 4 “Surveillance Out of Tolerance Data Sheet” as a cover sheet to System Engineering.
- c. Record the CR# and Action # on the Procedure Performance Data Sheet of the surveillance package.

CAUTION

Reference values test data SHALL be reviewed by the System Engineer within 96 hours of completing the test. (SPR 910187)

- 6.6.3 The completed test packages SHALL be forwarded to the Surveillance Scheduler after performance of the Second Review as indicated in the following steps.
 - 6.6.3.1 If the package performs a surveillance test for which a TCN is included in the test package. (i.e. requires status updating by Surveillance Scheduler)
 - 6.6.3.2 If the package has additional review signature requirements that have not been completed. (i.e. requires backend review by DSC, Section XI Coordinator, or System Engineer)
- 6.6.4 Completed test packages may be transmitted to RMS by the performing division after the DSC review whenever requirements of step 6.6.3 are not applicable.
- 6.7 Surveillance Test Package Records Processing
 - 6.7.1 The Surveillance Scheduler performs the following:
 - 6.7.1.1 Receives the completed Surveillance TCN and updates the Surveillance Database to status 70.
 - 6.7.1.2 Retains the Surveillance TCN until the completed test packages are received.
 - 6.7.1.3 Determines the status of overdue or outstanding surveillance tests, as required.
 - 6.7.1.4 Forwards the completed test packages to RMS and updates the surveillance package status to status 80.

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- 6.7.2 Once every two weeks, the Plant Surveillance Scheduler SHALL generate a list of completed surveillance test packages that have not been transmitted to RMS. This report is reviewed by the Plant Surveillance Scheduler to identify surveillance packages that have been outstanding for greater than two weeks. Notification of the DSCs and Cognizant Managers is required for surveillance test packages that cannot be located in the normal routing process. (LER #88-35). Status 70 Report.
- 6.7.3 When completed Test Packages are sent to RMS, for storage, the Surveillance Scheduler is no longer required to track the surveillance test.

7.0 Other Surveillance Program Controls**7.1 Credit Packages****NOTE**

Any test or inspection results that do not conform to the definition of Plant Surveillance Procedures as stated in step 2.2 MAY be used IF the requirements of Section 7.1 are met.

- 7.1.1 IF the performance of other tests, inspections, analyses, etc., satisfy surveillance requirements, THEN these results MAY be used in lieu of surveillance tests.
- 7.1.2 The use of such results to satisfy a surveillance requirement SHALL be documented as a Credit Package in accordance with the following requirements.
- 7.1.3 The Cognizant Manager is responsible for:
- 7.1.3.1 Ensuring Credit Package actions are performed as necessary and the Credit Package is technically and administratively correct.
 - 7.1.3.2 Ensuring reviews are performed by the appropriate groups in a timely manner.
- 7.1.4 The Cognizant Manager or designee for the surveillance test requirement is the Credit Package owner.
- 7.1.5 The Credit Package owner is responsible for the preparation of the credit package as follows:
- 7.1.5.1 Complete the Surveillance Credit Package Cover Sheet (Form 2)
 - a. Include Condition Report reference under the Reason for Credit Package, if applicable.

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- 7.1.5.2 Credit Package must specifically describe and provide technical basis for how the surveillance requirement is being satisfied. Reference to specific steps in a work document where the requirement is satisfied should be included. As necessary, describe actions taken in addition to the existing requirements (reference existing procedure and acceptance criteria) to satisfy the surveillance requirement.
- 7.1.5.3 Credit Package SHALL contain documentation of work or testing performed.
- 7.1.5.4 Observations performed must be accompanied by signature(s) of the personnel that make the observations.
- 7.1.5.5 Credit Package should provide a stand alone capability that will lead a reviewer to understand what was performed and how the actions satisfy the surveillance requirement.
- 7.1.5.6 Surveillance Credit Package Review Checklist (Form 3) and License Compliance Review (0PAP01-ZA-0103, Form 1) SHALL be completed by the Credit Package Owner or designee and included in the package.
- a. A Technical Review SHALL also review the checklist and sign at the bottom of the form indicating agreement that the credit package satisfies the requirements of the checklist.
- 7.1.5.7 A technical review and comment SHALL be performed by the technical owner of the surveillance procedure identified in the surveillance database for the surveillance requirement.
- 7.1.5.8 Documentation of the technical review and comment resolution SHALL be attached to the credit package.

NOTE

The record completion date is the final date physical work was performed, not the final administrative review date. This date will be used as a basis for scheduling the next performance of the surveillance. IF the test was performed over a time period greater than one week, THEN consult with the PSC to select a performance date which will ensure conservative rescheduling of the surveillance test requirement.

- 7.1.5.9 Completed TCN for the surveillance activity SHALL be completed and attached to the credit package.
- 7.1.5.10 Completed Credit Package SHALL be forwarded to the Cognizant Manager for approval.

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- 7.1.6 Cognizant Manager SHALL review the credit package and indicate approval by signing on Form 2 in Credit Package Review block
- 7.1.7 Surveillance credit package SHALL be routed to the Shift Supervisor or designee to complete Operation Review block on Form 2
- 7.1.8 Following Operations review, the surveillance credit package SHALL be processed in accordance with steps 6.6 and 6.7 of this procedure.
- 7.2 Surveillance Related Programs
- 7.2.1 The following programs are the subject of separate procedures, but are considered to be part of the Plant Surveillance Program.
- 7.2.1.1 Nuclear Air-Cleaning Systems Filter Test Program Description, OPGP03-ZE-0008
- 7.2.1.2 Snubber Testing Program Description, OPGP03-ZE-0009
- 7.2.1.3 Local Leakage Rate Test Calculations, Guidelines, and Program, OPSP11-ZA-0005
- 7.2.1.4 Inservice Testing Program for Valves, OPGP03-ZE-0021
- 7.2.1.5 Inservice Testing Program for Pumps, OPGP03-ZE-0022
- 7.2.1.6 System Pressure Testing Program, OPGP03-ZE-0023
- 7.2.1.7 Contaminated System Leakage Test Program, OPGP03-ZE-0028
- 7.3 Surveillance Test Instrumentation
- 7.3.1 Permanent plant instrumentation used to record surveillance acceptance criteria will be included in procedure OPGP03-ZM-0016, Installed Plant Instrumentation Calibration Verification Program.
- 7.3.2 Temporarily installed measuring and testing equipment used to record surveillance acceptance criteria will be controlled in accordance with OPGP03-ZC-0004, Measuring and Test Equipment Control Program.
- 7.4 Surveillance Testing Qualifications
- 7.4.1 Personnel performing surveillance activities SHALL be qualified under the requirements of OPGP03-ZA-0065, Plant Personnel Qualification.
- 7.4.1.1 Personnel not included in the scope of the Plant Personnel Qualification procedure SHALL be qualified as follows:

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- a. Performance Technicians are task qualified for testing activities in accordance with OPEP01-ZA-0013, Performance Technicians Training Program.

8.0 References

8.1 Licensing Documents

- 8.1.1 Technical Specifications
- 8.1.2 Technical Requirements Manual (TRM)
- 8.1.3 Offsite Dose Calculation Manual (ODCM)
- 8.1.4 Updated Final Safety Analysis Report (UFSAR)
 - 8.1.4.1 3.9.6 "Inservice Testing of Pumps and Valves"
 - 8.1.4.2 6.2.6 "Containment Leakage Testing"
 - 8.1.4.3 13.5.1 "Administrative Procedures"
- 8.1.5 OQAP, Operation Quality Assurance Plan

8.2 Regulatory Documents

- 8.2.1 Regulatory Guide 1.33, Revision 2, "Quality Assurance Program Requirements".
- 8.2.2 Regulatory Guide 1.88, Revision 2 "Collection, Storage, and Maintenance of Nuclear Power Plant Quality Assurance Records"
- 8.2.3 10CFR50.34(b)(6)(iv) "Contents of Applications: Technical Information"
- 8.2.4 10CFR50.36(c)(3) "Technical Specifications: Surveillance Requirements"
- 8.2.5 10CFR50.55a "Codes and Standards"
- 8.2.6 10CFR50 Appendix J "Primary Reactor Containment Leakage Testing for Water-Cooled Power Plants"
- 8.2.7 IEN 97-16, Preconditioning of Plant Structures, Systems, and components before ASME Code Inservice Testing or Technical Specification Surveillance Testing.
- 8.2.8 NUREG 1482, Guidelines for Inservice Testing at Nuclear Power Plants
- 8.2.9 ANSI – 3.2 – 1982, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants

8.3 Commitments

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- 8.3.1 Response to OMR 85-266 (Inadvertent Scrams due to Technician Leaving the Area during a Surveillance Calibration), ST-HS-HS-4822, February 28, 1986
- 8.3.2 SPR #880031, CH Pump 1B was not performed within interval after being placed on increased frequency testing.
- 8.3.3 LER #88-011, Non Performance Of Scheduled Surveillance Test For Essential Chilled Water Pump As A Result Of A Lost Test Package
- 8.3.4 D/R 87-81, Document Pagination
- 8.3.5 SPR #890328
- 8.3.6 HL&P Internal Memorandum, ST-P2-HS-1806 (PLTOPS 9005032), dated MAY 24, 1990, from J. W. Loesch/D.J. Denver to All Licensed Operators
- 8.3.7 LER #1-90-010, Failure To Perform A Sealed Source Surveillance Within The Required Technical Specification Interval
- 8.3.8 SPR # 900116, Wrong Procedure Revision Found in Field for Surveillance Testing
- 8.3.9 SPR #900254, Failure To Perform A Sealed Source Surveillance Within The Required Technical Specification Interval
- 8.3.10 SPR #910187, System Engineer Did Not Review Completion Of Test In Accordance With ASME Sec XI and OPGP03-ZE-0022 Within 96 Hours
- 8.3.11 91-374, Sampling of Main Turbine U1 Lube Oil revealed that the Water Content of the Oil was High Out of Spec
- 8.3.12 SPR #940212
- 8.3.13 SPR #933067
- 8.3.14 SPR #940498, Missed Staggered Test Surveillance Requirement
- 8.3.15 CR 95-8733, Nuclear Safety Evaluation Assessment 95-04, Instrument Calibration and Performance
- 8.3.16 CR 96-622, Expectations Regarding Performance of Surveillances were not met during Testing of SIMOV0016B on Dec. 23, 1995
- 8.3.17 NOV 94-05
- 8.3.18 LER 88-35, Nonperformance Of A Required Surveillance Test For A Component Cooling Water Valve Due To An Inadequate Procedure
- 8.3.19 LER 1-98-0007, CR 98-14202, Failure To Perform Quarterly Surveillance On Turbine-Driven Auxiliary Feedwater Pump

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8.4 Technical Standards and Manuals

8.4.1 INPO Good Practice

8.5 Drawings

8.5.1 None

8.6 STPEGS Procedures and Policies

8.6.1 Local Leakage Rate Test Calculations, Guidelines, and Program, 0PSP11-ZA-0005

8.6.2 Snubber Testing Program Description, 0PGP03-ZE-0009

8.6.3 Nuclear Air-Cleaning Systems Filter Test Program Description, 0PGP03-ZE-0008

8.6.4 Inservice Testing Program for Pumps, 0PGP03-ZE-0022

8.6.5 Inservice Testing Program for Valves, 0PGP03-ZE-0021

8.6.6 Inservice Inspection Program for Welds and Component Supports, 0PGP04-ZE-0304

8.6.7 System Pressure Testing Program, 0PGP03-ZE-0023

8.6.8 Contaminated System Leakage Test Program, 0PGP03-ZE-0028

8.6.9 Records Management, 0PGP07-ZA-0001

8.6.10 Work Process Program, 0PGP03-ZA-0090

8.6.11 Condition Reporting Process, 0PGP03-ZX-0002

8.6.12 Changes to Licensing Basis Documents and Amendments to the Operating License, 0PGP05-ZN-0004

8.6.13 Installed Plant Instrumentation Calibration Verification Program, 0PGP03-ZM-0016,

8.6.14 Plant Procedures Writer's Guide, 0PAP01-ZA-0101

8.6.15 License Compliance Review, 0PAP01-ZA-0103

8.6.16 Department Instruction Guidelines, 0PAP01-ZA-0105

8.6.17 Equipment History Program, 0PGP03-ZA-0503

8.6.18 Measuring and Testing Equipment Control Program, 0PGP03-ZC-0004

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- 8.6.19 Plant Personnel Qualification, OPGP03-ZA-0065
- 8.6.20 Performance Technician Training Program, OPEP01-ZA-0013
- 8.6.21 Performing and Verifying Station Activities, OPGP03-ZA-0010
- 8.6.22 CREE 01-11507-10, Implementation of Stroke Testing of Power Operated Valves
- 8.6.23 CR 04-11166, NRC Question on Preconditioning AF14 Pump Test

9.0 Support Documents

- 9.1 Form 1 - Surveillance Test Review Sheet
- 9.2 Form 2 – Surveillance Credit Package Cover Sheet
- 9.3 Form 3 – Surveillance Credit Package Review Checklist
- 9.4 Form 4 - Surveillance Out of Tolerance Data Sheet
- 9.5 Addendum 1 - Record Completion Guidelines
- 9.6 Addendum 2 - Guidelines for Surveillance Test Suspension and ASME Section XI Inservice Testing of Technical Specification Pumps and Valves
- 9.7 Addendum 3 - Technical Specification Numbering System for the Surveillance Test Program
- 9.8 Addendum 4 - Unused Reserved
- 9.9 Addendum 5 - Example document for displaying Surv Scope field
- 9.10 Addendum 6 - Preconditioning Guidelines

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Form 1	Sample Surveillance Input and Change Request Form		Page 1 of 2

Requester (Print)				Date	
ST ID Number		Unit Number		System	
Performing Section.		Writing Section		Train	
Applic. Modes		Plant Cond Modes		Condition Codes	
RWP Required		Security Required		Cleanliness Class	
Hot Work Permit		Fire Hazard Permit		Housekeeping Zone	
Confined Space		Work Start Approval		Equipment Clearance	
Men		Man Hours		Shift	
Special		Stagger Group		Other ST Satisfied	
Tech. Spec. Reference	<div></div> <div></div> <div>___ Enter "Y" if Continuation Sheets used and how many _____</div>				
Tag/TPNS Number	<div></div> <div></div> <div>___ Enter "Y" if Continuation Sheets used and how many _____</div>				
Surveillance Description					
Surveillance Remarks					
Spare Parts Tools	Class Bin	Description			
	___ Enter "Y" if Continuation Sheets used and how many _____				
Description of Change					
Signature				Date	

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Form 2	Surveillance Credit Package Cover Sheet (Sample)		Page 1 of 2

Unit Number:	Work Activity Number: -ST:		
Technical Specification Reference:			
Test Interval:	Test Performance Allowed in Plant Modes:	Train Reference:	
Reason for Credit Package: <input type="checkbox"/> Periodic Surveillance Test <input type="checkbox"/> Maintenance Work Package # _____ <input type="checkbox"/> Other <input type="checkbox"/> For Surveillance Credit			
Radiation Work Permit No.:	Fire Hazard Evaluation No.:	Equipment Clearance No.	
Credit Package Results Review: <input type="checkbox"/> Acceptable - All data within Acceptance Criteria <input type="checkbox"/> Acceptable - Data within Alert Range (explain in remarks) <input type="checkbox"/> Unacceptable - Any data NOT within Acceptance Criteria (explain in Remarks)			
Reviewed By: _____ <div style="display: flex; justify-content: space-between;"> Credit Package Owner Date Time </div>			
Plant Operations Review: <div style="display: flex; justify-content: space-between;"> <div> All Data within Acceptance Criteria? Any Data within Alert Range? Train in Service? Potential Reportable Occurrence? LCO Action Statement Entered? </div> <div> <input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes </div> <div> <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No </div> <div> <input type="checkbox"/> No </div> </div>			
Corrective Action Taken: _____			
Reviewed By: _____ <div style="display: flex; justify-content: space-between;"> Shift Supervisor Date Time </div>			
Division Surveillance Coordinator Review: Reviewed By: _____ <div style="display: flex; justify-content: space-between;"> Division Surveillance Coordinator Date Time </div>			

This form, when complete, shall be retained for the life of the plant.

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Plant Surveillance Programs			
Form 3	Surveillance Credit Package Review Checklist (Sample)		Page 1 of 1

UNIT ____ Credit for ST ____ WAN ____ Procedure ____
CHECK (OR PUT "N/A" IF NOT APPLICABLE)

- _____ 1. The correct Technical Specification Surveillance number is listed in the Surveillance Test Review Sheet (Form 2).
- _____ 2. The test method described in the credit package satisfies the intent of the Surveillance requirement.
- _____ 3. All safety limits, setpoints, equations, operability limits and acceptance criteria correspond exactly to those listed in the Technical Specification, UFSAR or other licensing documents.
- _____ 4. The acceptance criteria is in the form of specific pass-fail criteria, if possible.
- _____ 5. Sources of acceptance criteria, commitments, formulas, graphs, figures or calculations are listed as references.
- _____ 6. The Surveillance Credit Package provides clear documentation of the acceptability/unacceptability of the test results.
- _____ 7. Applicable Data Sheets are clearly identified in the credit package and attached.
- _____ 8. IF this credit package affects the accuracy of any information in the Surveillance Data Base, THEN the appropriate DSC has been notified, either verbally or in writing, and has been requested to notify the PSC in accordance with OPGP03-ZE-0004, Plant Surveillance Program.
- _____ 9. The test method ensures that redundant independent safety train functions are verified separately (SPR 890067).
- _____ 10. The full scale range of instruments used to measure acceptance criteria for ASME Section XI Inservice Testing have the required accuracy in accordance with ASME OM Code requirements. (SPR 900192, 940802).
- _____ 11. Instrumentation used to record data in this procedure is in the Tech Spec Surveillance Program or is included in OPGP03-ZM-0016, Installed Plant Instrumentation Calibration Verification Program. Otherwise, provide verification that the instrumentation is in calibration. (SPR 940012, SER 93-027)
- _____ 12. IF this credit package is to an Inservice Testing program requirement, THEN the IST Program Coordinator has reviewed the credit package for compliance with OM Code requirements.

Prepared by: _____ Date _____

Technical Reviewer: _____ Date _____

This form, when complete, shall be retained for the life of the plant.

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Plant Surveillance Program			
Form 4	Surveillance Out of Tolerance Data Sheet		Page 1 of 1

CR #	
------	--

ACTION NUMBER	
------------------	--

UNIT	0 1 2
------	-------------

WAN NUMBER	
---------------	--

SYS	TAG TPNS	ITEM DESCRIPTION

SURV NUMBER	
----------------	--

DATE PERFORMED	
-------------------	--

Forward this form with Out of Specified tolerance data sheets to SED within 30 days of calibration date.

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Plant Surveillance Program			
Addendum 1	Record Completion Guidelines		Page 1 of 1

1. LEGIBILITY

- A. Handwriting is readable.
- B. Ink was used for all data entries.
- C. Corrections, IF any, did not obliterate original data.

2. COMPLETENESS

- A. All required signatures are completed.
- B. Blanks are completed, marked "N/A", or otherwise explained.
- C. Required forms and attachments are attached.
- D. Package is bound, as to form one complete package.
- E. Paginate attachments, and list the procedure number and performance date so that it will be clearly visible. Attachments can be independently numbered from the package. Attachments independently numbered must be listed in the remarks with the number of pages of the attachment indicated. The procedure number and performance date may be listed only on the first page of the attachments if the remaining pages are identifiable as belonging to the attachment.
- F. IF an attachment is not required by the procedure, THEN list the attachment on the data package as not applicable.
- G. IF only portions of the procedure are being retained as described in step 6.3.12, THEN verify that it has been documented appropriately in the test package (e.g. remarks).
- H. A Condition Report (CR) has been initiated for any component(s) that has failed to satisfy the acceptance criteria and CR number recorded on the Procedure Performance Data Sheet.

3. TRACEABILITY

- A. Corrections are initialed and dated
- B. Reason for test is identified
- C. IF the test identified deficiencies, THEN appropriate corrective action is documented ("Typical Cover Sheet" (Addendum 2 of OPGP03-ZM-0016) is required on PSP05's which have as-found data out of tolerance). (SPR 940212)

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Addendum 2	Guidelines for Surveillance Test Suspension and ASME Section XI Inservice Testing of Technical Specification Pumps and Valves		Page 1 of 3

This addendum was prepared based on a review of Technical Specifications and ASME Section XI, requirements as summarized by Ref. 8.3.6.

1. Surveillance Test Suspension Guidelines

The following **SHOULD** be used to determine whether or not a surveillance test can be suspended. The examples and guidelines presented below include, but are not limited to, acceptable justification for surveillance test suspension.

- a) The plant equipment (not directly associated with the purpose and scope of the test) being tested is determined to be malfunctioning, and sufficient data or information has been obtained to determine what corrective measures **SHOULD** be taken.
- b) The test equipment being used to conduct testing is determined within reasonable doubt to be malfunctioning, and there is no reason to believe that the plant equipment being tested is malfunctioning. This would include obvious failures of the test equipment that are physically observable (e.g., ruptured gauges, smoke or odor from electrical test equipment, and instrument readings from multiple sources which disagree WHEN compared), and cases where the test equipment becomes detached, loose or damaged (e.g., electrical leads coming loose, gauges falling off, and test equipment being dropped).
- c) The test procedure is determined to be in error either in the Prerequisite, Procedure, Documentation or Acceptance Criteria sections. This **MAY** be determined either before, during or after performance of the affected procedure sections.
- d) During testing, the test performer realizes that an error has been made in performing or documenting a Prerequisite or Procedure section step.
- e) A plant emergency occurs, a request is made by the operational authority, or other events occurs such as shift change, personnel injury or hazards which the test performer feels sufficiently warrants test suspension.
- f) No surveillance test is to be suspended solely because the test results are anticipated to not meet the surveillance test's acceptance criteria.

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Addendum 2	Guidelines for Surveillance Test Suspension and ASME Section XI Inservice Testing of Technical Specification Pumps and Valves		Page 2 of 3

2. ASME Section XI Inservice Testing of Pumps and Valves

- a) The inservice test (IST) MAY be suspended to take corrective actions on equipment that is not directly associated with the operability, as defined in the Technical Specifications (TS) of the TS component being tested.

For example, a malfunctioning process instrument that is not considered a "necessary attendant instrument," with respect to the TS definition of operability, would not be directly associated with the operability of the TS component.

- b) IF the test results indicate that the TS component **SHOULD** be declared inoperable, THEN the IST **SHOULD** be completed, not suspended.
- c) The IST MAY (and **SHOULD**) be suspended IF it is obvious (based on qualitative assessment) that one or more of the test instruments is malfunctioning such that accurate readings cannot be obtained. Refer to Example 3b.
- d) IF it is known prior to initiating an IST that an obvious problem exists that will result in having to suspend the test, THEN the IST **SHOULD** not be initiated until the problem has been corrected.

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Addendum 2	Guidelines for Surveillance Test Suspension and ASME Section XI Inservice Testing of Technical Specification Pumps and Valves		Page 3 of 3

3. Examples

- a) While an IST is being performed on a TS pump, it is noted that the pump differential pressure is in the Required Action Range. The TS pump must be declared inoperable (and the applicable TS ACTION statement entered) at the time the test results indicate pump performance in the Required Action Range.

Note: The IST test data will subsequently be analyzed by Engineering for trending purposes, but not for the purpose of determining initial OPERABILITY/inoperability. Subsequent evaluation and analysis of the test results MAY prove the pump is OPERABLE, but the initial OPERABILITY determination must be made by the cognizant shift personnel and at the time the IST is performed.

- b) After initiating a TS pump IST, it is observed that the discharge pressure gauge is fluctuating excessively, making it difficult to obtain an accurate reading. The IST SHOULD be suspended and the appropriate guidelines followed. In this example, it is not necessary to declare the TS pump inoperable.
- c) During the performance of a TS pump IST, the pump differential pressure is observed just in the Required Action Range. The test instrumentation appears to be functioning normally. In this example, the pump test SHOULD be declared inoperable. It MAY be appropriate to have the test instruments re-calibrated and re-perform the IST as soon as practicable.
- d) After initiating a pump IST but prior to recording any test data, the pump differential pressure is observed in the Required Action Range. The pump SHOULD be declared inoperable, even though no test data has been recorded, assuming test conditions are normal and the test instruments appear to be functioning normally.

The normal practice is to record all test data and THEN make the official OPERABILITY determination. However, it is not permissible to delay recording test data in order to delay declaring a TS component inoperable.

- e) IF prior to or after initiating a valve stroke timing test, the digital stop watch is accidentally dropped onto the floor, THEN the IST test SHOULD not be started or SHOULD be suspended, as appropriate, until the stop watch has been re-calibrated.

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Addendum 3	Technical Specification Numbering System for the Surveillance Test Program		Page 1 of 2

The numbering of most Technical Specifications is derived from the Section 4 number and its subparagraph designators. For Technical Specifications where Section 4 refers to requirements listed in a table, the last digit used in the numbering system is the column number as illustrated in the following examples.

Excerpt from Technical Specifications:

**3/4.3.1 REACTOR TRIP SYSTEM INSTRUMENTATION
LIMITING CONDITION FOR OPERATION**

3.3.1 As a minimum, the Reactor Trip System instrumentation channels and interlocks of Table 3.3-1 SHALL be OPERABLE with RESPONSE TIMES as shown in Table 3.3-2.

APPLICABILITY: As shown in Table 3.3-1.

ACTION: As shown in Table 3.3-1.

SURVEILLANCE REQUIREMENTS (SECTION 4 of Technical Specification)

4.3.1.1 Each Reactor Trip system instrumentation channel and interlock and the automatic trip logic SHALL be demonstrated OPERABLE by the performance of the Reactor Trip System Instrumentation Surveillance Requirements specified in Table 4.3-1.

TABLE 4.3-1

<u>Functional Unit</u>	<u>Channel Check</u>	<u>Channel Calibration</u>	<u>ACOT</u>	<u>TADOT</u>
1. Manual Trip Reactor	N.A.	N.A.	N.A.	R
2. Power Range, Neutron Flux				
a. High Setpoint	S	D	Q	N.A.
b. Low Setpoint	S	R	S/U	N.A.

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Addendum 3	Technical Specification Numbering System for the Surveillance Test Program		Page 2 of 2

Examples of Technical Specification Numbering:

Test	Applicable Technical Specification Number
Manual Reactor Trip TADOT	4.3.1.1.1.4
Power Range, Neutron Flux, Low Setpoint, ACOT	4.3.1.1.2.b.3
Power Range, Neutron Flux, High Setpoint, Channel Check	4.3.1.1.2.a.1

- The last digit in the above examples is the column number.
- The Technical Specification number must be specific as to what requirements are satisfied. For example:
 - 4.3.1.1 - Implies **ALL** the tests of Table 4.3-1 are satisfied.
 - 4.3.1.1.2.b - Implies all four Power Range Low Setpoint tests (Channel Check, Channel Calibration, ACOT, and TADOT) are satisfied.
 - 4.3.1.1.2.b.1 - Implies only the Channel Check is satisfied.
- For Tech Specs 4.3.1.2 and 4.3.2.2 (Response Time Testing) the acceptance values tables which were used to derive the ST database numbering have been removed from the Tech Specs by TSC110. These tables are now located in Chapter 16 of the UFSAR. (SPR 933067)

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Addendum 4	Unused Reserved		Page 1 of 1

Credit Package Expectations have been included in procedure section 7.1.

Addendum 4 is held in reserve to maintain current Addenda numbers since many plant documents reference Addendum 6.

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Addendum 5	Example document for displaying Surv Scope field		Page 1 of 1

Date : 12/10/2001
Time : 02:27:42
User : T022486
(Destroy Previous Copy)

**South Texas Project
Nuclear Operating Company
SURVEILLANCE TEST SCHEDULING SHEETS**
Page : 1 Of 1

This report is
SQA level 2 per
OPGP07-ZA-0014

1

STRTSHT

UNIT

Date Issued : _____ Work Activity Number: 187297 -ST: 860007

Proceduro Number :	OPSP03-SI-0020	Train : A	Applicable Modes	Plant Conditio Modes
Proceduro Title :	SAFETY INJECTION SYSTEM MISCELLANEOUS AND TRAIN 1A(2A) VALVE OPERABILITY TEST		1234	123456

DP Number : _____ Frequency : TQ - At least once per 84 days.

Remarks : TECH SPEC 4.3.2.1.7.A.5 ADDED TO PERFORM CONTINUITY CHECKS AS REQUIRED BY THE ACTUATION LOGIC TEST. REF. I
97-587 BJS 3/13/97

Surv Scope:	MOV-0001A	REFUELING WATER STORAGE TANK SI PUMPS TRAIN A SUCTION ISOLATION MOV OPERATOR
	MOV-0004A	HI HEAD SAFETY INJECTION PUMP 1A DISCHARGE MOV OPERATOR (ORC)
	FV-3983	SAFETY INJECTION ACCUMULATORS ORC NITROGEN SUPPLY VALVE
	FV-3971	SIS CHECK VALVE TEST LINE ORC ISOLATION VALVE
	FV-3936	RWST OUTLET TO REFUELING WATER PURIF PUMP FIRST ISOLATION VALVE

Start Date : 07/08/2001 Due Date : 07/14/2001 Dead Date : 08/14/2001

Special
Condition
Codes No Special Condition Codes found for this WAN.

Perf. Sec : RO	Reactor Operations	Projected Men : 1	Man-Hours : 1	SHIFT:
Supp. Sec : EM	Electrical Maintenance	Projected Men : 2	Man-Hours : 2	

Tech Specification Number	Tech Specification Description
04.00.05	ASME SECTION XI INSERVICE TESTS AND INSPECTIONS
04.03.02.01.07.0A.05	AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP AUTOMATIC ACTUATION LOGIC AND ACTUATION RELAYS ACTUATION LOGIC TEST

Was the test terminated? YES NO
If YES, explain : _____

THIS FORM SHALL REMAIN WITH THE DATA PACKAGE THROUGHOUT THE SCHEDULING CYCLE.

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Plant Surveillance Program			
Addendum 6	Preconditioning Guidelines		Page 1 of 3

Preconditioning is defined as specific maintenance or operational activities that alter the physical condition of the equipment and are routinely performed prior to or during the surveillance tests, which could improve the performance of the component being tested. Preconditioning activities (e.g. cycling, cleaning, lubricating, agitating) include actions which consistently change the system, structure, or component “as-found” condition or relevant ambient or environmental conditions.

Surveillance testing should typically be performed on equipment in the “as-found” condition. Exceptions include testing that could result in unnecessary plant shutdowns, inappropriate challenges to safety systems, place undue stress on components, cause unnecessary cycling of equipment, or unnecessarily reduce the life expectancy of plant systems and components. Also, some surveillance activities cannot be performed without disturbing or altering the “as-found” condition of the equipment.

The following questions should be considered when evaluating the acceptability of preconditioning:

- Does the practice performed ensure that the SSC will meet testing acceptance criteria?
- Would the SSC have failed the surveillance without the preconditioning?
- Is preventive maintenance routinely performed just before the testing?
- Is the preventive maintenance performed only for scheduling convenience?

When determining if preconditioning is acceptable, care must be taken to recognize that some surveillance requirements have specific requirements that prohibit preconditioning. For example:

- ASME OM Code prohibits preconditioning motor operated valves prior to diagnostic testing or relief and safety valves before the initial set pressure testing.
- 10 CFR 50 Appendix J specifies that valves to be local leak rate tested SHALL be closed by normal operation and without any preliminary exercising or adjustments.
- IE Bulletin 86-02 noted that particular pressure switches evidenced sticky behavior that reduced on subsequent demands. Actuating these switches several times prior to recording the “as-found” data is inappropriate.

Preconditioning may or may not be acceptable, depending on circumstances associated with the particular test condition. Additionally, maintenance activities may mask identification of SSC degradation. Routine preventive maintenance, such as valve lubrication and pump venting, might occasionally coincide with the surveillance testing activities. In these instances, sufficient non-preconditioned “as-found” data should exist (i.e., previous test results of the affected or similar devices) to ensure that the ability to assess the operational readiness of the SSC and to trend degradation in SSC performance. (CR 04-11166)

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Addendum 6	Preconditioning Guidelines		Page 2 of 3

IF a concern for the potential for a preconditioning activity is identified and cannot be resolved by the stakeholders involved, THEN a Condition Report SHALL be initiated and the activity evaluated for impact and acceptability. Preconditioning evaluations are quality records and SHALL be transmitted to RMS after approval. (CNAQ CRs are not automatically transmitted to RMS.)

The following examples are provided to illustrate application of this guidance on preconditioning. Although these examples do not cover all possibilities of preconditioning that may be identified during the course of surveillance testing, the intent of each example should be used on a case by case basis to determine the significance of actual conditions and situations relative to preconditioning. IF any questions remain after consideration of these examples, THEN a condition report should be generated to evaluate the specific situation.

1. Example: During inservice testing, a valve position indication light is discovered to be burned out during the valve stroke and the test cannot be completed. After the light bulb is replaced, the test is subsequently re-performed. Due to unavoidable circumstances and with the understanding that the bulb is not expected to be routinely burned out each time the test is performed, this is not unacceptable preconditioning even though the valve was cycled prior to the official test performance. Where plant conditions allow, continuation of the test should be delayed to allow the system conditions to return to the before test conditions, if practical.
2. Example: A preventative maintenance task to lubricate the motor operator of a valve is scheduled on a yearly frequency, but the surveillance test for the valve is performed on a quarterly frequency. Since testing is performed without prior maintenance activities three times, it is not “routine” and therefore the yearly maintenance activity is not considered preconditioning. However, an annual surveillance test that is routinely preceded by an annual PM task is unacceptable preconditioning and would require an evaluation to determine the acceptability of this condition.
3. Example: A design modification is installed to improve the operational performance of pneumatic valve operator prior to the next scheduled surveillance test. This is not unacceptable preconditioning, unless it is known beforehand that the surveillance test would not have passed satisfactorily without the modification.
4. Example: ASME code requirements have precedence over preconditioning issues. As described previously some testing SHALL be performed in the as-found condition. In contrast, per ASME code, stroke time testing with results above the acceptance criteria but below the limiting value requires a second stroke time test. This is not unacceptable preconditioning because testing is being performed to satisfy requirements that have been approved for use by the NRC.

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Addendum 6	Preconditioning Guidelines		Page 3 of 3

5. Example: The Residual Heat Removal system has a number of surveillance tests that can only be performed during refueling outage. In order to achieve the system conditions needed for the surveillance testing, it is first necessary to operate the equipment to achieve a plant shutdown. The flow paths used for achieving a plant shutdown are the same ones used for surveillance testing. This is acceptable preconditioning because it is simply not practicable to obtain as-found data by any other means.

6. Example: Routine pump venting or draining turbine steam supply lines directly preceding surveillance testing without proper controls is unacceptable preconditioning.

7. Example: Normal operation of an electric motor driven pump just prior to the performance of its ASME inservice test is acceptable preconditioning. IF the pump is already inservice, THEN it is not required to shut the pump down and allow a cooldown period. ASME code testing requirements specify that the pump run a minimum of 2 minutes to allow steady state operation prior to collecting test data. Prior operation of the electric driven motor is not considered to significantly enhance the ability of the pump to meet its required parameters (e.g., flow, pressure and vibration).

8. Example: Turbine driven Auxiliary Feedwater pump (AF14(24)) operability testing is performed monthly and inservice testing is performed quarterly. Maintenance is performed on this pump and turbine trip/throttle valve every six months. This maintenance is acceptable preconditioning because it is occasionally performed (i.e. there is sufficient as-found test data to show that the pump will performed acceptably even if maintenance was not performed). Additionally, the operating procedure requires a second test of AF14(24) pump after a cooldown window of 48 to 168 hours to verify operability whenever maintenance is performed.

9. Example: The purpose of trending of SSCs is to identify degradation trends and perform maintenance prior to the component failure. IF a pump (e.g., Essential Cooling Water Pump) has a degrading trend, THEN the maintenance activity to improve or restore the capability of the pump is scheduled for a work window, which is also the window for the inservice test. Following maintenance a reference values test will be performed to record new reference values for the restored pump. The inservice test is not performed prior to maintenance since the pump data will no longer be useful for trending and unavailability time for the pump, and therefore risk to the plant, will be adversely impacted. The maintenance performed in this situation is acceptable preconditioning of the pump.

10. Additional examples are provided in Information bulletin IEN 97-16.

Date : 09/12/2007
Time : 08:31:10
User : T021459

South Texas Project
Nuclear Operating Company
TEST COMPLETION NOTIFICATION

Page : 1 Of 2

STRTKSHT

UNIT

1

Work Activity Number: 290611 -ST: 87000288

Procedure
Number : 0PSP03-RC-0009
Procedure Title : REACTOR COOLANT SYSTEM VALVE OPERABILITY
TEST
ST Description: PRZR PORV BLOCK VALVE OPERABILITY TEST

Train : Z

Applicable
Modes

123

Plant Condition
Modes

123456

DP Number :

Frequency : TQ - At least once per 84 days.

Remarks : ADDED TECH SPEC 4.0.5 TO THIS SURVEILLANCE. 4.0.5 SURVEILLANCE SCOPE REDUCED TO INCLUDE ONLY VALVES THAT ARE GQA RISK RANK HIGH OR MEDIUM FOR THIS SURVEILLANCE ACTIVITY. BJS 4/2/2002

Surv. Scope: Of all the valves listed in this surveillance procedure only the valves listed below SHALL be tested.
If no valves are listed below, Then perform the surveillance in its entirety.

MOV-0001A PRESSURIZER POWER OPERATED RELIEF BLOCK VLV MOV OPERATOR

MOV-0001B PRESSURIZER POWER OPERATED RELIEF BLOCK VLV MOV OPERATOR

Start Date : 11/01/2007

Due Date : 11/06/2007

Dead Date : 12/05/2007

Special Condition Codes 30 TECH SPEC 3.0.4 NOT APPLICABLE
62 EXEMPTION ALLOWANCES INCORPORATED INTO THIS SURVEILLANCE TEST.

Performing Section RO
Reactor Operations

Projected Men : 0
Projected Man-Hours : 0

Actual Men :
Actual Man-Hours :

No Supporting Sections found for this WAN.

Tech Spec

04.00.05
ASME SECTION XI INSERVICE TESTS AND INSPECTIONS
04.04.04.02
BLOCK VALVE OPERABILITY TEST

Other STs Satisfied

Procedure

Credit Required

No Special Condition Codes found for this WAN.

Was the test terminated? YES NO
If YES, explain :

Performer's Remarks :

Date : 09/12/2007
Time : 08:31:10
User : T021459

South Texas Project
Nuclear Operating Company
TEST COMPLETION NOTIFICATION
Page : 2 Of 2

UNIT **1**

Work Activity Number: 290611 -ST: 87000288

Test Results Review :

Test Completed : Sat Unsat NA

Test Coordinator :

Print Name

Signature

Test Completion Date / Time

=====

UPON COMPLETION, PLACE THIS FORM IN THE SURVEILLANCE RETURN BOX.

=====

Entered by : _____

_____/_____/_____
Date

Verified by : _____

_____/_____/_____
Date

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Reactor Coolant System Valve Operability Test			

Procedure Performance Data Sheet

Unit Number: <i>1</i>	Work Activity Number: <i>290611</i>	-ST: <i>87000288</i>
Technical Specification Reference: 4.0.5 [ITS 5.5.8], 4.4.4.2 [ITS SR 3.4.11.1], 4.6.3.1 [ITS NONE], 4.6.3.3 [ITS SR 3.6.3.5]		
Test Interval: Per the Surveillance Database	Test Performance Allowed in Plant Modes: 1, 2, 3, 4, 5, 6 or Core Off Loaded to the Spent Fuel Pool	Train Ref: Not Applicable
Reason for Test: <input checked="" type="checkbox"/> Periodic Surveillance Test (MOV-0001A and MOV-0001B only) <input type="checkbox"/> Maintenance per Work Package # <i>N/A</i> <input type="checkbox"/> Other <i>N/A</i>		
<input type="checkbox"/> For Surveillance Credit <input type="checkbox"/> Not for Surveillance Credit		
Radiation Work Permit No.: <i>N/A</i>	Fire Hazard Evaluation No.: <i>N/A</i>	Equipment Clearance No.: <i>N/A</i>
Administrative Approval to Perform Test: <div style="display: flex; justify-content: space-between;"> <div> <i>James Madison</i> Shift Supervisor </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> Did not indicate surveillance was being performed for Surveillance Credit. (Non-critical error) </div> </div>		
Test Results Review: <input type="checkbox"/> Acceptable - All data within acceptance criteria <input type="checkbox"/> Unacceptable - Any data NOT within acceptance criteria (explain in Remarks)		
Reviewed by: _____ <div style="display: flex; justify-content: space-between;"> <div>Test Coordinator</div> <div>Date</div> <div>Time</div> </div>		
Plant Operations Review: <div style="display: flex; justify-content: space-between;"> <div>All Data Within Acceptance Criteria?</div> <div> <input type="checkbox"/> Yes <input type="checkbox"/> No </div> </div> <div style="display: flex; justify-content: space-between;"> <div>Equipment is Operable?</div> <div> <input type="checkbox"/> Yes <input type="checkbox"/> No </div> </div> <div style="display: flex; justify-content: space-between;"> <div>OAS required? OAS No. _____</div> <div> <input type="checkbox"/> Yes <input type="checkbox"/> No </div> </div> <div>Corrective Action Taken:</div>		
Reviewed By _____ <div style="display: flex; justify-content: space-between;"> <div>Shift Supervisor</div> <div>Date</div> <div>Time</div> </div>		
Division Surveillance Coordinator Review: Reviewed By: _____ <div style="display: flex; justify-content: space-between;"> <div>Division Surveillance Coordinator</div> <div>Date</div> <div>Time</div> </div>		

This procedure, when complete, SHALL be retained for the life of the plant.

Reactor Coolant System Valve Operability Test

Procedure Performance Data Sheet

Section XI Coordinator Review (MOV-0001A and MOV-0001B only):

- ☐ Acceptable - All data within acceptance criteria
☐ Unacceptable - Data within Required Action Range

Corrective Action Taken:

Reviewed By: _____
 _____ Section XI Coordinator _____ Date _____ Time _____

M&TE Used:

Description	STPEGS No.	Cal. Due Date
Stopwatch	100-00711 011	1/12/08

Performers and Verifiers:

Name (Print)	Signature	Initials
Samuel Adams	<i>Samuel Adams</i>	<i>SBA</i>
Ben Edwards	<i>Benjamin Edwards</i>	<i>BE</i>

Remarks: NOTE 1 - At the direction of the Shift Supervisor, suspended performance of 0PSP03-RC-0009 at step 5.5.2 due to a personnel injury requiring the attention of the Control Room Staff. Completed step 5.5.2 and will recommence as determined by the Shift Supervisor. Logged suspension of the surveillance in the Control Room Log.

Suspension date and time: Today, 20 minutes ago

Did not justify the use of “N/A” for sections 5.2 - 5.4 in the Remarks section.

(Non-critical error)

This procedure, when complete, SHALL be retained for the life of the plant.

Reactor Coolant System Valve Operability Test

5.5 Full Stroke and Isolation Time Test of ISOL MOV-0001A

Initials

5.5.1 Record the AS FOUND position for the following:

5.5.1.1 "ISOL MOV-0001A" PRZR PORV Isol Open SBA

5.5.1.2 "ISOL MOV-0001A" handswitch Norm SBA

5.5.2 ISOL MOV-0001A Close Exercise and Stroke Time Test

5.5.2.1 Simultaneously start the stopwatch and close "ISOL MOV-0001A" by placing the handswitch located on CP004 to CLOSE.

SBA

AC

5.5.2.2 WHEN "ISOL MOV-0001A" is full closed (green lamp lit and red lamp extinguished), THEN stop stopwatch and record time:

16.97 seconds

SBA

NOTE 1

Acceptance Criteria: Unit 1 12.97 sec $\leq t \leq$ 17.55
Unit 2 13.26 sec $\leq t \leq$ 17.95

Test was suspended before performing the open stroke test. The valve should have been opened OR the Shift Supervisor notified of the changes in configuration affected by the surveillance IAW 0PGP03-ZE-0004.

(CRITICAL ERROR)

"pop" open when the associated possible transients as a result of the

5.5.3 ISOL MOV-0001A Open Exercise and Stroke Time Test

5.5.3.1 Simultaneously start the stopwatch and open "ISOL MOV-0001A" by placing the handswitch located on CP004 to OPEN.

AC

5.5.3.2 WHEN "ISOL MOV-0001A" is full open (red lamp lit and green lamp extinguished), THEN stop stopwatch and record time:

_____ seconds

Acceptance Criteria: Unit 1 12.34 sec $\leq t \leq$ 16.70
Unit 2 12.69 sec $\leq t \leq$ 17.17

NUCLEAR TRAINING DEPARTMENT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

TITLE: **APPROVE OFFSITE NOTIFICATION**

JPM NO.: **A8**

REVISION: **1**

**JOB PERFORMANCE MEASURE WORKSHEET
SOUTH TEXAS PROJECT**

JPM Title: APPROVE OFFSITE NOTIFICATION

JPM No.: A8

Rev. No.: 1

STP Task: SRO-47030, Discuss the duties and responsibilities of the Shift Supervisor as delineated in 0ERP01-ZV-SH01, Shift Supervisor

STP Objective: SRO-47030, Implement the requirements of 0ERP01-ZV-SH01, Shift Supervisor

**Related
K/A Reference:** 2.4.40 (4.0) Knowledge of the SRO's responsibilities in emergency plan implementation

References: 0ERP01-ZV-SH01, Rev 21, Shift Supervisor
0ERP01-ZV-IN02, Rev 21, Notifications to Offsite Agencies

**Task Normally
Completed By:** SRO

**Location
of Testing:** NTF

**Time
Critical Task:** YES - 15 minutes

**Validation
Time:** 10 minutes

Required Materials (Tools/Equipment):

None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU HAVE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 1 was at 100% reactor power with I&C troubleshooting a failed Channel I Power Range instrument (all associated bistables were tripped). During this time, the Channel II Pressurizer Pressure channel failed low. The reactor had to be tripped locally by opening the reactor trip breakers. The operating crew is performing the actions of 0POP05-EO-FRS1, Response to Nuclear Power Generation - ATWS. A Site Area Emergency has been declared in accordance with 0ERP01-ZV-IN01, Emergency Classification, initiating condition SS2.

Other plant conditions include:

- There are NO Red Path Critical Safety Functions (CSF's)
- There is NO radiological release in progress

INITIATING CUE:

You are the Shift Supervisor/Emergency Director. The Control Room State/County communicator has just handed you a completed 0ERP01-ZV-IN02, Notifications to Offsite Agencies, Data Sheet 1, Offsite Agency Notification Message Form for your approval to release the data for the initial off-site notification.

NOTE

This is a time critical JPM. The time clock will start after you have been briefed and indicate that you understand the task to be performed.

THREE errors exist for this JPM, one Critical and two Non-Critical. As a MINIMUM, you are to IDENTIFY the Critical error and one of the two Non-Critical errors. Editorial errors such as spelling, grammar, or punctuation are unintentional and DO NOT count.

You are to take the following into account during your review:

1. There is no intended error under Item #8 "Explain" on Data Sheet 1.

JOB PERFORMANCE MEASURE INFORMATION SHEET (CONT.)

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

The applicant correctly identifies the Critical Error and one of two Non-Critical errors on the notification form.

HANDOUTS:

1. Working copy of 0ERP01-ZV-IN02, Notifications to Offsite Agencies
2. Working copy of 0ERP01-ZV-IN01, Emergency Classification, Addendum 1
3. Completed Data Sheet 1 for the applicants review

NOTES:

1. The Evaluator is provided with an ANSWER KEY which is appropriately marked ("KEY"). The location of inserted errors is also mentioned in the body of this JPM. The evaluator shall not handout any page(s) marked as "KEY" to the applicant.
2. The ANSWER KEY will be marked so as to indicate the location and nature of the errors.

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

SAT/UNSAT Performance Step: 1

Start time: _____

Obtain the completed Offsite Agency Notification Message Form

Standard:

The applicant obtains a copy of the completed Offsite Agency Notification Message Form

Comment:

Cue:

Provide the applicant with the following

1. Working copy of 0ERP01-ZV-IN02, Notifications to Offsite Agencies
2. Working copy of 0ERP01-ZV-IN01, Emergency Classification, Addendum 1
3. Completed Data Sheet 1 for the applicants review

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Review the completed Offsite Agency Notification Message Form.

Standard:

The applicant reviews the Offsite Agency Notification Message Form for technical accuracy and procedural compliance.

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 3 (C)

Locate and discuss errors located within the form

Standard:

The applicant locates the Critical Error and one of the two Non-Critical Errors as listed below:

- 1. Under item #3, "CR" should be checked as 'Originating From'. This is a **Non-Critical Error**.*
- 2. Under item #4, "Site Area Emergency" should be checked, NOT 'Alert'. This is the **Critical Error**.*
- 3. Under item #6, "New" should be checked. This is a **Non-Critical Error**.*

Comment:

In accordance with 0ERP01-ZV-IN02, Notification to Offsite Agencies, Items 9, 10 and 11 are not required to be completed when making the first notification.

Cue:

Notes:

- TERMINATE THE JPM -

Stop time:_____

VERIFICATION OF COMPLETION

Job Performance Measure: APPROVE OFFSITE NOTIFICATION

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: Sat / Unsat

Evaluator: _____

Signature _____

Date _____

JPM - HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Unit 1 was at 100% reactor power with I&C troubleshooting a failed Channel I Power Range instrument (all associated bistables were tripped). During this time, the Channel II Pressurizer Pressure channel failed low. The reactor had to be tripped locally by opening the reactor trip breakers. The operating crew is performing the actions of 0POP05-EO-FRS1, Response to Nuclear Power Generation - ATWS. A Site Area Emergency has been declared in accordance with 0ERP01-ZV-IN01, Emergency Classification, initiating condition SS2.

Other plant conditions include:

- There are NO Red Path Critical Safety Functions (CSF's)
- There is NO radiological release in progress

INITIATING CUE:

You are the Shift Supervisor/Emergency Director. The Control Room State/County communicator has just handed you a completed 0ERP01-ZV-IN02, Notifications to Offsite Agencies, Data Sheet 1, Offsite Agency Notification Message Form for your approval to release the data for the initial off-site notification.

NOTE

This is a time critical JPM. The time clock will start after you have been briefed and indicate that you understand the task to be performed.

THREE errors exist for this JPM, one Critical and two Non-Critical. As a MINIMUM, you are to IDENTIFY the Critical error and one of the two Non-Critical errors. Editorial errors such as spelling, grammar, or punctuation are unintentional and DO NOT count.

You are to take the following into account during your review:

1. There is no intended error under Item #8 "Explain" on Data Sheet 1.

	0ERP01-ZV-IN02	Rev. 21	Page 12 of 32
Notifications To Offsite Agencies			
Data Sheet 1	Offsite Agency Notification Message Form (Typical)		Page 1 of 1

STP 1690 (04/05)		SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION	
Rev. 14		OFFSITE NOTIFICATION MESSAGE FORM	
Roll call: _____			
DPS Pierce		Matagorda County	Time _____
A L W A Y S C O M P L E T E	1. Communicator: (name) <u>Joe Communicator</u>		
	<input checked="" type="checkbox"/> Unit 1 <input type="checkbox"/> Unit 2		
	2. <input type="checkbox"/> This is a drill <input checked="" type="checkbox"/> This is NOT a drill		
	3. Message Number <u>1</u> Originating From: <input type="checkbox"/> CR <input type="checkbox"/> TSC <input checked="" type="checkbox"/> EOF		
	4. Emergency Classification: <input checked="" type="checkbox"/> New <input type="checkbox"/> Unchanged		
	Declared at: Date: <u>Today</u> Time: <u>5 minutes ago</u>		
	<input type="checkbox"/> Unusual Event <input checked="" type="checkbox"/> Alert <input type="checkbox"/> Site Area Emergency <input type="checkbox"/> General Emergency <input type="checkbox"/> Terminated		
	5. Radiological release in progress: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	6. Recommended Protective Actions: <input type="checkbox"/> New <input checked="" type="checkbox"/> Unchanged		
	A. <input checked="" type="checkbox"/> No recommended protective actions at this time		
F O L L O W U P	B. <input type="checkbox"/> Recommended protective actions are:		
	1. Evacuate zones: _____		
	2. Shelter zones: _____		
	3. Sectors affected: _____		
	7. Department of State Health Services (DSHS) concurs with recommendations in 6 above:		
	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not Contacted <input type="checkbox"/> No		
	8. Event Description: <input checked="" type="checkbox"/> New <input type="checkbox"/> Unchanged		
	Classification Path/Initiating Condition: <u>SS2</u>		
	Explain: <u>Reactor failed to automatically shutdown when required. Initial attempts at manual shutdown were not successful</u>		

A L L	9. Meteorological data: <input type="checkbox"/> New <input type="checkbox"/> Unchanged		
	A. Wind direction from _____ Degrees Wind speed _____ MPH		
	B. Stability Class (Check One): <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/> G		
	C. Precipitation (Check One): <input type="checkbox"/> None <input type="checkbox"/> Rain <input type="checkbox"/> Sleet <input type="checkbox"/> Snow <input type="checkbox"/> Hail <input type="checkbox"/> Fog		
	10. Release Involves: <input type="checkbox"/> New <input type="checkbox"/> Unchanged		
	A. <input type="checkbox"/> Radiological release in progress: Expected Duration: _____ hrs. Started: Date _____ Time _____		
	B. <input type="checkbox"/> Radiological release which has ended: Duration: _____ hrs. Terminated: Date _____ Time _____		
	11. Remarks: _____		

	12. Approved: _____ Date _____ Time _____		
(Print/Sign) Emergency Director			

STI 32025951	0ERP01-ZV-IN02	Rev. 21	Page 1 of 32
Notifications To Offsite Agencies			
Quality	Non Safety-Related	Usage: N/A	Effective Date: 07/12/06
Max Keyes	N/A	N/A	Emergency Response Division
PREPARER	TECHNICAL	USER	COGNIZANT ORGANIZATION

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Notifications To Offsite Agencies**1.0 Purpose and Scope**

- 1.1 This procedure specifies the actions to be taken for notifying offsite agencies and the Nuclear Regulatory Commission of a declared emergency at the South Texas Project Electric Generating Station (STPEGS).
- 1.2 This procedure specifies the actions to be taken for notifying offsite agencies and the Nuclear Regulatory Commission of discovery of an undeclared (or miss-classified) event.

2.0 Definitions

- 2.1 Emergency Notification System (ENS) - FTS, 2001 Telephone System, used for initial notification of an emergency to the NRC.

3.0 Precautions and Limitations**NOTE**

Addendum 4, Emergency Communications provides information on the following communications links:

- NRC Emergency Notification System (ENS)
- State and County Ringdown Line
- Health Physics Network (HPN)
- STP Coordinator (QSE) Ringdown Line

3.1 Notifications to offsite agencies shall meet the following time limits and criteria:**3.1.1 The State of Texas and Matagorda County shall be contacted within 15 minutes of the Emergency Director declaring:**

- Initial classification of the emergency;
- Change in the classification; or
- Change in Protective Action Recommendations (PARs) for the public, including changes in wind direction resulting in PARs affecting additional zones.

Notifications To Offsite Agencies

- 3.1.2 Once contacted, the information contained in Items 1-8 and 12 of Data Sheet 1, Offsite Agency Notification Message Form shall be transmitted. All information shall be provided after message Number 1.
- 3.1.3 Notify the NRC Operations Center immediately following notifications to the State/County and no later than one hour after the emergency has been declared. Use Data Sheet 4, NRC Event Notification Worksheet, as a record of conversation. If more than one communicator is available, NRC notification may be made concurrently with State/County notification.
- 3.1.4 The Emergency Response Data System (ERDS) shall be activated at the time the NRC Operations Center is notified of the Alert, Site Area Emergency or General Emergency (see Addendum 5, Instructions for Operating Emergency Response Data System).
- 3.1.5 Issue updates to the State and County approximately hourly unless a State/County consensus is obtained for a reduced frequency (e.g. a static condition).
- 3.1.6 Immediately update the NRC, via the open line of communications, per step 5.2.1.d of this procedure.
- 3.1.7 After Offsite Agency Notification Message Number 1, all subsequent notifications shall be completed in entirety.
- 3.2 If the Emergency Classification or PARs are changed during the 15 minute notification period, then continue to complete notifications to the State/County prior to initiating the new notification, and inform the agencies that a change in classification or change in PAR will be forthcoming. (LCTS 9100453-936)
 - 3.2.1 An exception to this situation is when termination is declared before the offsite agencies are notified of the emergency condition. For this situation, issue both notification forms concurrently.
- 3.3 Notifications to offsite agencies shall follow the guidelines in Addendum 4, Emergency Communications, when communication system deficiencies exist.
- 3.4 To report an event or condition that met an EAL threshold and no longer exists at the time of discovery and the event or condition was due to a rapidly concluded event or an oversight in the emergency classification.

Notifications To Offsite Agencies

3.4.1 State and County notifications shall be made within one hour of discovery by completing Data Sheet 5, Non-Emergency Offsite Agency Notification Message Form, and use the ring down line ensuring to document the event condition has cleared.

3.4.2 Make NRC notifications within one hour of the discovery of the undeclared (or miss-classified) event and use the ENS Line for NRC notification.

3.5 Any revisions to this procedure that directly or indirectly affect the format or usage of Data Sheet 1 shall be reviewed by the Department of State Health Services (DSHS) prior to becoming effective.

4.0 Responsibilities

NOTE

Refer to Addendum 1, Responsibilities for Notification.

- 4.1 The individual with Emergency Director authority is responsible for approving all notifications to offsite agencies and ensuring notifications are made within the required time frames.
- 4.2 The Shift Supervisor is responsible for implementation of this procedure while functioning as the Emergency Director. Actual completion of forms may be delegated to the communicators.
- 4.3 The Control Room ENS Communicator is responsible for maintaining the open line with the NRC, unless otherwise directed by the NRC. This responsibility shall not transfer to the Technical Support Center (TSC) or Emergency Operations Facility (EOF).
- 4.4 The Control Room ENS Communicator is responsible for activating the ERDS at the time the NRC Operations Center is notified of the Alert, Site Area Emergency, or General Emergency (see Addendum 5).
- 4.5 The Control Room State/County Communicator is responsible for notifications to the State/County and for maintaining Data Sheet 3, Offsite Agencies Log, while the Shift Supervisor has Emergency Director authority.
- 4.6 The Chemical/Radiochemical Manager in the TSC is responsible for gathering information and preparing Data Sheet 1 and implementation of this procedure while the TSC Manager has Emergency Director authority. The Chemical/Radiochemical Manager is responsible for ensuring the correctness and timeliness of Data Sheet 1.

Notifications To Offsite Agencies

- 4.7 The Chemical/Radiochemical Manager in the TSC only communicates with the NRC upon their request. NRC Communications is maintained in the Control Room and Emergency Operations Facility.
- 4.8 The TSC Communicator in the TSC is responsible for completing notifications to the State and County when provided completed notification forms from the Chemical / Radiochemical Manager, and maintaining Data Sheet 3. The TSC Communicator shall contact the NRC using the ENS line as directed by the Chemical/Radiochemical Manager. The TSC Communicator shall maintain a file containing copies of all Data Sheet 1 that originate from either the Control Room or Technical Support Center.
- 4.9 The Engineering Assistant in the EOF is responsible for implementation of this procedure while the EOF Director has Emergency Director authority. The Engineering Assistant is responsible for gathering information and preparing Data Sheet 1, and has primary responsibility for the correctness and timeliness of Data Sheet 1. The Engineering Assistant should also, if time permits, routinely complete Data Sheet 2.
- 4.10 The Offsite Agency Communicator in the EOF is responsible for completing notifications to the State/County, when directed by the Emergency Director, and for maintaining Data Sheet 3. The Offsite Agency Communicator shall maintain a file containing a copy of all Data Sheet 1 from the start of the event to recovery.
- 4.11 The Licensing Director in the EOF is responsible for completing notifications to the NRC over the ENS once the EOF is activated.

5.0 Procedure**CAUTION**

The State and County are required to be contacted within 15 minutes of the Emergency Director declaring any of the following:

- Initial classification of the emergency, (Item 4)
- Change in the classification, (Item 4) or
- Change in Protective Action Recommendations (PARs) for the public, including changes in wind direction resulting in PARs affecting additional Zones.

Notifications To Offsite Agencies

5.1 Offsite Agency Notification (State/County)

NOTE

Print the information on Data Sheet 1 (black ink should be used).

ONLY BLOCKS 1-8 AND 12 ARE REQUIRED TO BE COMPLETED UPON INITIAL NOTIFICATION. ALL INFORMATION SHALL BE PROVIDED AFTER MESSAGE NUMBER 1.

5.1.1 Complete Data Sheet 1

NOTE

The Communicator, at the time of contact, enters the names of the persons contacted at DPS Pierce and Matagorda County at the top of each form. Record the time of contact.

NOTE

New means the information from the previous Message has changed, Example: On Message 1 all new boxes will be checked, In subsequent Messages new will only be checked if the information is different from the previous Message. Whether New or Unchanged, always complete the information.

- a) ITEM 1 - Name of the STP person communicating information to offsite agencies. Mark the applicable Unit. If the event is common unit, then mark Unit 1.
- b) ITEM 2 - Mark if notification is a drill or is NOT a drill.
- c) ITEM 3 - Start with message number one (1). Number sequentially, independent of facility originating Data Sheet 1, and indicate which facility is originating the message.
- d) ITEM 4 - Mark if the classification is NEW or UNCHANGED. Fill in the date and time the current classification was declared. Mark the event classification.
- e) ITEM 5 - Mark YES or NO. A radiological release is defined as exceeding the Emergency Action Level (EAL) for an Unusual Event (Initiating Condition RU1).

Notifications To Offsite Agencies

- f) ITEM 6 - Mark if the recommended protective actions are NEW or UNCHANGED.
- A General Emergency Classification shall contain a Protective Action Recommendation.
 - Refer to 0ERP01-ZV-IN07, Offsite Protective Action Recommendations for PARs. Mark Box A or B. If Box A is marked then go to Step g (Item 7).
 - If Box B is checked, enter evacuated zones on line 1, sheltered zones on line 2, and sectors affected on line 3. If Line 1 or 2 has no data enter "None".
 - Ensure correct notations are used for zones and sectors. Zones range from 1 to 11. Sectors range from A to R. Refer to Addendum 4, Protective Response Zones in 0ERP01-ZV-IN07, Offsite Protective Action Recommendations, for a cross reference of zones and sectors.
- g) ITEM 7 - Indicate DSHS disposition on Protective Action Recommendation YES or NO or NOT CONTACTED.
- h) ITEM 8 - Mark if the event description is NEW or UNCHANGED. Enter the alphanumeric designator in the initiating condition line.
- Addendum 7 contains suggested wording that may be used by the communicator as an aid.
 - If wording other than that provide in Addendum 7 is used, then, include a brief explanation of the event in lay terms for clarification to offsite agencies. Legibly print a non-technical description of the event. DO NOT USE ACRONYMS.

Notifications To Offsite Agencies

NOTE

Only Blocks 1-8 and 12 are required to be completed upon initial notification. The remainder of the form should be completed if time allows. The entire form shall be completed on all subsequent notifications or updates.

- i) ITEM 9 - Mark NEW or UNCHANGED. Ensure 15 minute average lower wind speed and wind direction is used, See Addendum 8. Meteorological data is available on the Integrated Computer System (ICS) Emergency Response Facility Data Acquisition Display System (ERFDADS) [EM-01 2601]. See Addendum 6, Atmospheric Stability Classification.
- j) ITEM 10 - Mark NEW or UNCHANGED. If Item 5 is checked yes (Radiological Release in Progress) then complete this section. A radiological release is defined as exceeding the EAL for an Unusual Event (Initiating Condition RU1). Use a default 4 hour value if the release duration is unknown.
- k) ITEM 11 - Additional remarks, if any.
- l) ITEM 12 - Signature of Emergency Director authorizing release of Data Sheet 1.

5.1.2 Complete notifications using Data Sheet 3.

- a) Contact State/County on ringdown line or alternate numbers (see Addendum 2, Communications Equipment).
 - Read ITEMS 1-8.
 - Supply information in Items 9-11, if available.
- b) Fax notification forms. Log time fax completed and confirmed.
- c) If the Communicator is also making NRC notifications, complete Section 5.2 of this procedure prior to continuing.
- d) Contact DSHS and issue information on Data Sheet 1.
- e) Notify unaffected Unit Control Room that an emergency fax notification has been made.

Notifications To Offsite Agencies

- f) Notify the STP Coordinator (QSE) that emergency fax notification has been made. This step is not required by the Offsite Agency Communicator located in the EOF.
- 5.1.3 Issue update notifications to State and County approximately hourly unless a State/County consensus is obtained for a reduced frequency (e.g. a static condition).
- a) Update notifications are made using Data Sheet 1, Offsite Agency Notification Message Form.
 - b) If the Emergency Director is located in the Emergency Operations Facility and events are not rapidly changing, then, following issuance of Data Sheet 1, issue Data Sheet 2, Supplemental Notification Form. (Guidance for issuing Data Sheet 2 is found in Addendum 3, Instructions for Completing Supplemental Notification Form.)
- 5.1.4 If Data Sheet 1 or Data Sheet 2 is issued with incorrect information, then immediately contact the notified agencies correct the information and follow-up with a corrected Data Sheet 1 or Data Sheet 2.
- 5.1.5 If Data Sheet 1 or Data Sheet 2 is being transmitted with incorrect information, then immediately stop transmission, gather the correct information, and re-transmit a corrected Data Sheet 1 or Data Sheet 2.
- 5.2 NRC Notification
- 5.2.1 Notify the NRC Operations Center immediately following initial notification of State/County agencies and no later than one hour after the emergency has been declared. If more than one communicator is available, these notifications may be done concurrently. Use Data Sheet 4 as a record of initial conversation. Additional records of conversation may be made on Emergency Action Log Sheets.
- a) Description, Provide a description of the event to include systems affected, actuation's and initiating signals, causes, effect of event on plant, actions taken or planned, etc. Additional space is provided on back of Data Sheet 4. Check block when Control Room Log Book entry is made.
 - b) Radiological Releases, Complete this section if the event is radiologically based. Information from Data Sheet 1 may be used if information described in Data Sheet 4 is not available and obtaining it would likely cause a late notification.

Notifications To Offsite Agencies

- c) Activate the ERDS at the time the NRC Operations Center is notified of the Alert, Site Area Emergency or General Emergency (see Addendum 5).
- d) The Control Room ENS Communicator must maintain an open telephone line with the NRC, unless otherwise directed by the NRC. During the course of the event, immediately report any further degradation in the level of safety of the plant or other worsening conditions, including those that require declaration of any of the emergency classes, or may change from one emergency class to another, or a termination of the emergency class. Immediately report the results of ensuing evaluations or assessments of plant conditions, the effectiveness of response or protective measures taken, and information relating to plant behavior that is not understood.

6.0 References

- 6.1 STPEGS Emergency Plan
- 6.2 OPGP05-ZV-0004, Emergency Plan Implementing Procedure Users Guide
- 6.3 0ERP01-ZV-IN07, Offsite Protective Action Recommendations
- 6.4 0ERP01-ZV-IN01, Emergency Classification
- 6.5 10CFR50.72(a)ii.3
- 6.6 Inspection Report 91-03-01 (LCTS 9100453-936)
- 6.7 10CFR50 Appendix E, IV.D.3
- 6.8 IEN 89-89

7.0 Support Documents

- 7.1 Data Sheet 1, Offsite Agency Notification Message Form (Typical)
- 7.2 Data Sheet 2, Supplemental Notification Form (Typical)
- 7.3 Data Sheet 3, Offsite Agencies Log
- 7.4 Data Sheet 4, NRC Event Notification Worksheet (Typical)
- 7.5 Data Sheet 5, Non-Emergency Offsite Agency Notification Message Form
- 7.6 Addendum 1, Responsibilities for Notifications
- 7.7 Addendum 2, Communications Equipment

Notifications To Offsite Agencies

- 7.8 Addendum 3, Instructions for Completing Supplemental Notification Form
- 7.9 Addendum 4, Emergency Communications
- 7.10 Addendum 5, Instructions for Operating Emergency Response Data System (ERDS)
- 7.11 Addendum 6, Atmospheric Stability Classification
- 7.12 Addendum 7, Suggested Wording for Event Description
- 7.13 Addendum 8, Meteorological Tower Data Instructions

Notifications To Offsite Agencies

Data Sheet 1

Offsite Agency Notification Message Form (Typical)

Page 1 of 1

STP 1690 (04/05)

SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION

Rev. 14

OFFSITE NOTIFICATION MESSAGE FORM

Roll call:

DPS Pierce

Matagorda County

Time

A L W A Y S C O M P L E T E	1. Communicator: (name) _____ <input type="checkbox"/> Unit 1 <input type="checkbox"/> Unit 2	
	2. <input type="checkbox"/> This is a drill <input type="checkbox"/> This is <u>NOT</u> a drill	
	3. Message Number _____ Originating From: <input type="checkbox"/> CR <input type="checkbox"/> TSC <input type="checkbox"/> EOF	
	4. Emergency Classification: <input type="checkbox"/> New <input type="checkbox"/> Unchanged Declared at: _____ Date: _____ Time: _____ <input type="checkbox"/> Unusual Event <input type="checkbox"/> Alert <input type="checkbox"/> Site Area Emergency <input type="checkbox"/> General Emergency <input type="checkbox"/> Terminated	
	5. Radiological release in progress: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	6. Recommended Protective Actions: <input type="checkbox"/> New <input type="checkbox"/> Unchanged A. <input type="checkbox"/> No recommended protective actions at this time B. <input type="checkbox"/> Recommended protective actions are: 1. Evacuate zones: _____ 2. Shelter zones: _____ 3. Sectors affected: _____	
	7. Department of State Health Services (DSHS) concurs with recommendations in 6 above: <input type="checkbox"/> Yes <input type="checkbox"/> Not Contacted <input type="checkbox"/> No	
	8. Event Description: <input type="checkbox"/> New <input type="checkbox"/> Unchanged Classification Path/Initiating Condition: _____ Explain: _____ _____	
	F O L L O W U P A L L	9. Meteorological data: <input type="checkbox"/> New <input type="checkbox"/> Unchanged A. Wind direction from _____ Degrees Wind speed _____ MPH B. Stability Class (Check One): <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/> G C. Precipitation (Check One): <input type="checkbox"/> None <input type="checkbox"/> Rain <input type="checkbox"/> Sleet <input type="checkbox"/> Snow <input type="checkbox"/> Hail <input type="checkbox"/> Fog
		10. Release Involves: <input type="checkbox"/> New <input type="checkbox"/> Unchanged A. <input type="checkbox"/> Radiological release in progress: Expected Duration: _____ hrs. Started: Date _____ Time _____ B. <input type="checkbox"/> Radiological release which has ended: Duration: _____ hrs. Terminated: Date _____ Time _____
11. Remarks: _____ _____		
12. Approved: _____ Date _____ Time _____ (Print/Sign) Emergency Director		

Notifications To Offsite Agencies

Data Sheet 2

Supplemental Notification Form (Typical)

Page 1 of 1

STP 1686C (03/06)
REV. 10

SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION

SUPPLEMENTAL NOTIFICATION FORM

☐ THIS IS A DRILL
☐ THIS IS NOT A DRILL

1. MESSAGE S- _____ 3. EMERGENCY DIRECTOR LOCATION: () CR () TSC () EOF
() AEOF

2. UNIT STATUS: UNIT 1 POWER _____
UNIT 2 POWER _____ COMMUNICATOR NAME: _____

STATUS OF BOUNDARY

INTACT _____
POTENTIAL LOSS _____
LOSS _____
RE-ESTABLISHED _____

4.

FUEL
CLADDING

()

()

()

N/A

5. REACTOR
COOLANT
SYSTEM

()

()

()

()

6. CONTAINMENT

()

()

()

()

7. PROGNOSIS OF SITUATION

() IMPROVING () STABLE
() DEGRADING SLOWLY () DEGRADING QUICKLY
() UNKNOWN, UNDER ASSESSMENT

8. EAL #: _____

9. NUMBER OF FUNCTIONAL SAFETY TRAINS: _____

10. OFFSITE SUPPORT REQUESTED

() NONE
() AMBULANCE
() FIRE
() LOCAL LAW ENFORCEMENT
() WESTINGHOUSE
() BECHTEL
() INPO
() NRC
() OTHER _____

11. ONSITE PROTECTIVE MEASURES ORDERED

ACCOUNTABILITY
EVACUATION OF NON-ESSENTIALS
CONTROL ROOM EVACUATION
TSC/OSC RELOCATION
EOF RELOCATION
POTASSIUM IODIDE ISSUED
MEDICAL EMERGENCY OFFSITE TRANSPORT
OTHER _____

YES

NO

12. ORGANIZATION /FACILITIES ACTIVATED

() TSC/OSC
() EOF
() ALTERNATE EOF
() JIC

13. PROJECTED OFFSITE DOSES (CENTERLINE)

	TEDE (REM)	THYROID CDE (REM)
EXCLUSION AREA BOUNDARY _____	_____	_____
2 MILES _____	_____	_____
5 MILES _____	_____	_____
10 MILES _____	_____	_____
ESTIMATED RELEASE DURATION _____	_____	HRS
RELEASE RATE _____	_____	µCi/sec

14. MISCELLANEOUS INFORMATION

15. EMERGENCY DIRECTOR APPROVAL:

SIGNATURE

16. ACKNOWLEDGMENT OF RECEIPT:

SIGNATURE

DATE

TIME

DATE

TIME

Notifications To Offsite Agencies

Data Sheet 4

NRC Event Notification Worksheet (Typical)

Page 1 of 2

NRC FORM 361
(12-2000)REACTOR PLANT
EVENT NOTIFICATION WORKSHEETU.S. NUCLEAR REGULATORY COMMISSION
OPERATIONS CENTER

EN #

NRC OPERATION TELEPHONE NUMBER: PRIMARY -- 301-816-5100 or 800-532-3469*, BACK UPS -- [1st] 301-951-0550 or 800-449-3694*,
[2nd] 301-415-0550 and [3rd] 301-415-0553 *Licensees who maintain their own ETS are provided these telephone numbers.

NOTIFICATION TIME ET CT	FACILITY OR ORGANIZATION	UNIT	NAME OF CALLER	CALL BACK #
EVENT TIME & ZONE CT	EVENT DATE	POWER/MODE BEFORE /	POWER/MODE AFTER /	
EVENT CLASSIFICATIONS		1-Hr. Non-Emergency 10 CFR 50.72(b)(1)		
<input type="checkbox"/> GENERAL EMERGENCY	GEN/AAEC	<input type="checkbox"/> TS Deviation	ADEV	<input type="checkbox"/> (v)(A) Safe S/D Capability AINA
<input type="checkbox"/> SITE AREA EMERGENCY	SIT/AAEC	4-Hr. Non-Emergency 10 CFR 50.72(b)(2)		<input type="checkbox"/> (v)(B) RHR Capability AINB
<input type="checkbox"/> ALERT	ALE/AAEC	<input type="checkbox"/> (i) TS Required S/D	ASHU	<input type="checkbox"/> (v)(C) Control of Rad Release AINC
<input type="checkbox"/> UNUSUAL EVENT	UNU/AAEC	<input type="checkbox"/> (iv)(A) ECCS Discharge to RCS	ACCS	<input type="checkbox"/> (v)(D) Accident Mitigation AIND
<input type="checkbox"/> 50.72 NON-EMERGENCY	(see next columns)	<input type="checkbox"/> (iv)(B) RPS Actuation (scram)	ARPS	<input type="checkbox"/> (xii) Offsite Medical AMED
<input type="checkbox"/> PHYSICAL SECURITY (73.71)	DDDD	<input type="checkbox"/> (xi) Offsite Notification	APRE	<input type="checkbox"/> (xiii) Loss Comm/Asmt/Resp ACOM
<input type="checkbox"/> MATERIAL/EXPOSURE	B???	8-Hr. Non-Emergency 10 CFR 50.72(b)(3)		60-Day Optional 10 CFR 50.73(a)(1)
<input type="checkbox"/> FITNESS FOR DUTY	HFIT	<input type="checkbox"/> (ii)(A) Degraded Condition	ADEG	<input type="checkbox"/> Invalid Specified System Act AINV
<input type="checkbox"/> OTHER UNSPECIFIED REQMT	(see last column)	<input type="checkbox"/> (ii)(B) Unanalyzed Condition	AUNA	Other Unspecified Requirement (Identify)
<input type="checkbox"/> INFORMATION ONLY	NNF	<input type="checkbox"/> (iv)(A) Specified System Actuation	AESF	<input type="checkbox"/> NONR
				<input type="checkbox"/> NONR

DESCRIPTION

Include: Systems affected, actuations and their initiating signals, causes, effect on plant, actions taken or planned, etc. (Continue on back)

☐ Control Room Log Book entry made.

NOTIFICATIONS	YES	NO	WILL BE	ANYTHING UNUSUAL OR NOT UNDERSTOOD?	<input type="checkbox"/> YES (explain above)	<input type="checkbox"/> NO
NRC RESIDENT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DID ALL SYSTEMS FUNCTION AS REQUIRED?	<input type="checkbox"/> YES	<input type="checkbox"/> NO (explain above)
STATE(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MODE OF OPERATION	ESTIMATE FOR RESTART DATE:	ADDITIONAL INFO ON BACK
LOCAL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	UNTIL CORRECTED:		<input type="checkbox"/> YES <input type="checkbox"/> NO
OTHER GOV AGENCIES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
MEDIA/PRESS RELEASE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

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Data Sheet 4	NRC Event Notification Worksheet (Typical)		Page 2 of 2

ADDITIONAL INFORMATION

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RADIOLOGICAL RELEASES: CHECK OR FILL IN APPLICABLE ITEMS (specific details/explanations should be covered in event description)						
<input type="checkbox"/> LIQUID RELEASE	<input type="checkbox"/> GASEOUS RELEASE	<input type="checkbox"/> UNPLANNED RELEASE	<input type="checkbox"/> PLANNED RELEASE	<input type="checkbox"/> ONGOING	<input type="checkbox"/> TERMINATED	
<input type="checkbox"/> MONITORED	<input type="checkbox"/> UNMONITORED	<input type="checkbox"/> OFFSITE RELEASE	<input type="checkbox"/> T.S. EXCEEDED	<input type="checkbox"/> RM ALARMS	<input type="checkbox"/> AREAS EVACUATED	
<input type="checkbox"/> PERSONNEL EXPOSED OR CONTAMINATED		<input type="checkbox"/> OFFSITE PROTECTIVE ACTIONS RECOMMENDED		*State release path in description.		
	Release Rate (Ci/sec)	% T.S. Limit	HOO Guide	Total Activity (Ci)	% T.S. Limit	HOO Guide
Noble Gas			0.1 Ci/sec			1000 Ci
Iodine			10 µCi/sec			0.01 Ci
Particulate			1 µCi/sec			1 mCi
Liquid (excluding tritium and Dissolved noble gases)			10 µCi/min			0.1 Ci
Liquid (tritium)			0.2 Ci/min			5 Ci
Total Activity						
	PLANT STACK	CONDENSER/AIR EJECTOR	MAIN STEAM LINE	SG BLOWDOWN	OTHER	
RAD MONITOR READINGS						
ALARM SETPOINTS						
% T. S. LIMIT (if applicable)						
RCS OR SG TUBE LEAKS: CHECK OR FILL IN APPLICABLE ITEMS (specific details/explanations should be covered in event description)						
LOCATION OF THE LEAK (e.g., SG #, valve, pipe, etc)						
LEAK RATE	UNITS: gpm/gpd	T. S. LIMITS	SUDDEN OR LONG TERM DEVELOPMENT			
LEAK START DATE:	TIME:	COOLANT ACTIVITY AND UNITS:		PRIMARY -	SECONDARY -	
	MST					
LIST OF SAFETY EQUIPMENT NOT OPERATIONAL:						
EVENT DESCRIPTION (Continued from front)				INITIALS AND DATE		

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Notifications To Offsite Agencies			
Addendum 1	Responsibilities For Notification		Page 1 of 1
RESPONSIBILITY	RESPONSIBLE PERSON BASED ON LOCATION OF EMERGENCY DIRECTOR		
	CR	TSC	EOF
Complete Data Sheet 1, Offsite Agency Notification Message Form	State/County Communicator	Chemical/Radiochemical Manager	Engineering Assistant
Complete Data Sheet 4, NRC Event Notification Worksheet and Maintain Open line	ENS Communicator	N/A	N/A
Update NRC on event status	ENS Communicator	Chemical/Radiochemical Manager	Licensing Director
Complete Data Sheet 2, Supplemental Notification Form	N/A	N/A	Engineering Assistant
Log State/County Notifications using Data Sheet 3, Offsite Agencies Log	State/County Communicator	TSC Communicator	Offsite Agency Communicator

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Notifications To Offsite Agencies			
Addendum 2		Communications Equipment	Page 1 of 1

The below list is in order of preference based on available communications equipment.

State / County Notification	NRC Notification	Health Physics Network (HPN)
State / County Ring Down Telephone	Emergency Notification System (ENS) Telephone	FTS, 2001 Dedicated Telephone
Outside Telephone Lines	Outside Telephone Lines	Outside Telephone Lines
Satellite Telephone	Satellite Telephone	Satellite Telephone
Unit 1 Control Room direct telephone line to Bay City	Unit 1 Control Room direct telephone line to Bay City	Unit 1 Control Room direct telephone line to Bay City
Microwave line	Microwave line	Microwave line
Ring Down line to STP Coordinator	Ring Down line to STP Coordinator	Ring Down line to STP Coordinator
Radio Communications via Matagorda County Sheriff's Office (Radio located in CAS, SAS, and the Eastgate badging cubicle)	Radio Communications via Matagorda County Sheriff's Office (Radio located in CAS, SAS, and the Eastgate badging cubicle)	Radio Communications via Matagorda County Sheriff's Office (Radio located in CAS, SAS, and the Eastgate badging cubicle)

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Notifications To Offsite Agencies			
Addendum 3	Instructions for Completing Supplemental Notification Form		Page 1 of 2

NOTE

- Data Sheet 2 should be completed using black ink. No items are to be left blank even if information is unchanged.
- The EOF Engineering Assistant should, if time permits, routinely complete Data Sheet 2.

- ITEM 1 - Use same number as on Data Sheet 1, which will be completed in conjunction with this form.
- ITEM 3 - Identify the location of the Emergency Director and the name of the Communicator.
- ITEM 9 - Enter the number of Engineered Safety Features (ESF) trains in the affected unit which are functional.
- ITEM 10 - Mark offsite support requested which will be responding to the site. This block is completed to facilitate the support group requested through county established roadblocks.
- ITEM 14 - Examples of miscellaneous information:
- a. Estimate of quantity of radioactive material released or being released and the points and heights of releases.
 - b. Chemical and physical form of released material, including estimates of the relative quantities and concentration of noble gases, iodines and particulates.
 - c. Estimate of any surface radioactive contamination in plant, onsite or offsite.
 - d. Any licensee emergency response actions underway.
- General -
- a. Enter unavailable if information is not known.
 - b. Enter N/A if item is not applicable.

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Addendum 3	Instructions For Completing Supplemental Notification Form		Page 2 of 2

c. Fax the completed and approved Data Sheet 2 to all agencies listed below:

- Matagorda County Sheriff's Office Dispatcher
- Matagorda County Emergency Operations Center
- Texas Department of Public Safety (DPS), Pierce, TX
- Department of State Health Services (DSHS).
- Governor's Division of Emergency Management
- Texas Department of Public Safety, Houston, TX
- Emergency Operations Facility
- Affected Unit's TSC
- Affected Unit's Control Room (when Emergency Direction is not in Control Room)
- Unaffected Unit's Control Room
- Site Public Affairs (EOF)
- Joint Information Center (JIC) (if activated)
- South Texas Project Owners

NOTE

Fax numbers can be found in the STPEGS Emergency Communications Directory.

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Notifications To Offsite Agencies			
Addendum 4	Emergency Communications (SPR 91-0447)		Page 1 of 4

1.0 Emergency Communications System

1.1 Emergency Notification System (ENS)

1.1.1 The ENS is a telephone circuit provided by the NRC.

1.1.2 The ENS is activated to notify the NRC of a declared emergency or drills/exercises and to maintain communications with the NRC Operations Center as needed.

1.1.3 If the ENS is activated, then a person SHALL remain on the line until the NRC agrees that the ENS may be terminated.

1.1.4 There are seven (7) methods to notify the NRC. These are:

- ENS telephone
- Outside phone lines
- Satellite Telephone
- Unit 1 Control Room direct phone line to Bay City
- Microwave line to Center Point Energy and call forwarded to the NRC
- Ringdown line to STP Coordinator (QSE) and call forward to the NRC
- Security radio communications to Matagorda County Sheriff's Office and forwarded to the NRC

1.1.5 The principal method of communications with the NRC is the ENS. The circuit may also be activated by the NRC.

1.1.6 If the ENS is out of order (see Addendum 2), then use outside phone lines to notify the NRC at one of the following telephone numbers (in order of priority) AND remain on the line.

1-301-816-5100

1-301-951-0550

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Addendum 4	Emergency Communications (SPR 91 0447)		Page 2 of 4

1.1.7 If the outside telephone lines are out of order, then use the Satellite Telephone to call the NRC AND remain on the line if requested by the NRC.

1.1.8 If the Satellite Telephone is out of order, then use the Unit 1 Control Room direct phone line to Bay City and notify the NRC at one of the following telephone numbers (in order of priority) AND remain on the line.

1-301-816-5100

1-301-951-0550

1.1.9 If the Unit 1 Control Room direct telephone line to Bay City is out of order, then use the microwave tower line (32-0) to Center Point Energy and have the Operator/Security complete the phone call to the NRC AND remain on the line if requested by the NRC.

1.1.10 If the microwave tower line is out of order, then use the STP Coordinator (QSE) Ringdown line and have the dispatcher forward the call or information to the NRC AND remain on the line if requested by the NRC.

1.1.11 If the STP Coordinator (QSE) Ringdown line is out of order, then use the Security radio console to contact the Matagorda County Sheriff's Office and request the information be forwarded to the NRC. Stay on the radio with the Matagorda County Sheriff's Office.

1.2 State and County Ringdown line

1.2.1 The State and County ringdown line is provided to notify State and County officials of a declared emergency.

1.2.2 The State-County ringdown line is an automatic ringdown telephone circuit terminated on a communications console or an ORANGE telephone (EOF).

1.2.3 There are seven (7) methods to notify the State/County. These are:

- State/County ringdown telephone
- Outside telephone lines
- Satellite Telephone
- Unit 1 Control Room direct telephone line to Bay City

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Addendum 4	Emergency Communications (SPR 91 0447)	Page 3 of 4	

- Microwave line to Center Point Energy and call forwarded to the State and County
- Ringdown line to STP Coordinator and call forward to the State/County
- Security radio communications to Matagorda County Sheriff's Office and forwarded to DPS Pierce

1.2.4 If the State/County ringdown line is out of order, then use outside telephone lines to notify the State and County at the following telephone numbers:

State/DPS-Pierce

Matagorda County Sheriff's Office

9-1-979-541-4595

9-1-979-245-5526

- 1.2.5 If the outside telephone lines are out of order, then use the Satellite Telephone to call the state and county at the above telephone numbers.
- 1.2.6 If the Satellite Telephone is out of order, then use the Unit 1 Control Room direct telephone line to Bay City to notify the State/County.
- 1.2.7 If the Unit 1 Control Room direct telephone line to Bay City is out of order, then use the microwave line (32-0) to Center Point Energy and have the Operator/Security complete the telephone calls to the State/County.
- 1.2.8 If the microwave line is out of order, then use the STP Coordinator (QSE) Ringdown line and forward the telephone call or information to the State/County.
- 1.2.9 If the STP Coordinator (QSE) Ringdown line is out of order, then use the Security radio to notify the County and request they forward the information to DPS Pierce.

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Addendum 4	Emergency Communications (SPR 91 0447)	Page 4 of 4	

1.3 Health Physics Network (HPN)

1.3.1 The HPN is terminated on an FTS, 2001 telephone.

1.3.2 The HPN is to be used only at the request of the NRC.

1.3.3 If the outside telephone lines are out of service, then use the microwave line (32-0) to Center Point Energy and have the Operator/Security complete the telephone call to the NRC/HPN.

1.3.4 If the HPN telephone line is out of service, then notify the NRC Operations Center. (IEN 89-19)

- NOTIFY the NRC when the telephone set has been returned to service. (IEN 89-19)

1.3.5 The HPN telephone is designed to provide communications with the NRC Health Physics Section and/or other nuclear power plants during a declared emergency. STPEGS health physics personnel MAY request a conference call with other nuclear power plants on the HPN by asking the NRC to connect the desired plant(s).

1.4 STP Coordinator (QSE) Ringdown line

1.4.1 The STP Coordinator (QSE) ringdown line is an automatic ringdown between the Owners and the plant.

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Notifications To Offsite Agencies			
Addendum 5	Instructions for Operating Emergency Response Data System (ERDS)		Page 1 of 2

- 1.0 Emergency Response Data System (ERDS) Activation, Termination, and Error Handling Instructions:
 - 1.1 Activate the ERDS from Integrated Computer System / Emergency Response Facility Data Acquisition Display System (ICS/ERFDADS) Main Menu:
 - 1.1.1 Click on the Menu UP Arrow (WDPF Main Menu)
 - 1.1.2 Select Custom Graphics
 - 1.1.3 Select Top Level Menu
 - 1.1.4 Select AF, AM, AP, BR, & CC DISPLAYS
 - 1.1.5 Select NRC Link Control
 - 1.1.6 Click in ACTIVATE Block to connect with the NRC ERDS Computer at the NRC Operations Center in Rockville, Maryland, via a dedicated telephone line.
 - 1.1.7 The dial-up should generally succeed within one minute, at which time the NRC Link Control screen will indicate ACTIVE and ONLINE and will begin counting GOOD CYCLES. Otherwise, the ICS/ERFDADS will automatically re-dial and attempt to connect with the NRC ERDS computer several additional times. If no connection is established within approximately five minutes, then NRC Link Control screen will indicate the link status via error messages. If more than five minutes elapses without a successful response, then site personnel should notify the NRC before terminating efforts to establish the ERDS data link.
 - 1.1.8 The display terminal may now be used for other purposes while the ERDS data continues to be transmitted to the NRC. Whenever the ERDS is active, it is suggested that NRC Link Control or NRC Link Status screen be used to monitor the status of the ERDS data link.
- 2.0 Steps to terminate the ERDS:
 - 2.1 If NRC Link Control screen is not present on an ICS/ERFDADS terminal, repeat the ERDS activation steps 1.1.1, 1.1.2, 1.1.3, 1.1.4, and 1.1.5.
 - 2.2 When NRC Link Control screen is present on the terminal CLICK in the TERMINATE Block. This action causes the ICS/ERFDADS to disconnect the telephone connection with the NRC ERDS computer in Rockville, Maryland.

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Addendum 5	Instructions For Operating Emergency Response Data System (ERDS)		Page 2 of 2

- 2.3 When the ERDS is terminated by STP, the NRC Link Control and NRC Link Status screens will show the message Terminated and the Link Status Block with the message OFFLINE. When STP terminates the ERDS, then 15 minutes must lapse before attempting to activate the ERDS again from the same STP Unit.

3.0 Steps to handle ERDS error conditions:

- 3.1 If an error condition occurs, then the error messages will be displayed on NRC Link Control and NRC Link Status screens. If an error condition occurs, then obtain a hardcopy of the error message using Print Screen.
- 3.2 When the ERDS is active and no errors are occurring, then displays NRC Link Control and NRC Link Status screens will tag the ERDS Messages block with the message Active, the Link Status block with the message Online, the Read Error block with the message OK, the Nonsensical error block with the message OK, and the Write Error block with the message OK.
- 3.3 If an attempt is made to activate the ERDS by STP and all telephone lines at NRC are busy, then displays NRC Link Control and NRC Link Status screens will tag the ERDS Messages block with the message NRC lines busy. Obtain a hardcopy of the display showing the NRC lines busy message and then follow the steps to terminate the ERDS. Periodically try again to activate the ERDS, producing a hardcopy of the display each time the NRC lines busy message is shown.
- 3.4 If an attempt is made to activate the ERDS by STP and NRC denies access to the ERDS computer system in Rockville, Maryland, then displays NRC Link Control and NRC Link Status will tag the ERDS Messages block with the message Unaccepted by NRC. Obtain a hardcopy of the display showing the denied access by NRC message and then follow the steps to terminate the ERDS. Periodically try again to activate the ERDS, producing a hardcopy of the display each time the denied access by NRC message is shown.
- 3.5 NRC has the ability to terminate an active ERDS link. If NRC terminates such a link, then displays NRC Link Control and NRC Link Status will tag the ERDS Messages block with the message Terminated by NRC and the Link Status block with the message Offline. Obtain a hardcopy the display showing the ERDS link termination by NRC.
- 3.6 If the ERDS link is active and the telephone line is disconnected, then the ICS/ERFDADS will automatically re-dial and attempt to reconnect with the NRC ERDS computer system. If the telephone line is disconnected, then displays NRC Link Control and NRC Link Status will tag the ERDS Messages block with either the message Active or with the message Modem trouble, the Link Status block with the message Offline, and the remainder of the status messages blocks with the message OK or the message TRBL.

If the ERFDADS is not able to reconnect with the NRC ERDS computer system, then hardcopy the displayed error messages and contact the ERFDADS System Engineer.

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Addendum 6	Atmospheric Stability Classification		Page 1 of 1

Obtain DELTA TEMP AVG From ICS Screen EM-01 6162/2601

Stability Classification	Class	Delta T (60m-10m)°F	* Lower Wind Dir Sigma
Extremely Unstable	A	< -1.7	≥ 22.5
Moderately Unstable	B	-1.71 TO -1.53	17.5 TO 22.5
Slightly Unstable	C	-1.52 TO -1.35	12.5 TO 17.5
Neutral	D	-1.34 TO -0.45	7.5 TO 12.5
Slightly Stable	E	-0.44 TO 1.35	3.8 TO 7.5
Moderately Stable	F	1.36 TO 3.60	2.1 TO 3.8
Extremely Stable	G	> 3.60	< 2.1

* Do not use lower wind Dir Sigma if wind speed is less than 5 mph, use default Stability Class D.

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Notifications To Offsite Agencies			
Addendum 7	Suggested Wording for Event Description		Page 1 of 3

NOTE

Obtain Initiating Condition alphanumeric designation from the Emergency Director. Match designation with list below and enter into item 8 of Data Sheet 1.

Fission Product Barrier Degradation

- FU1..... Loss or potential loss of Containment barrier
- FA1..... Loss or potential loss of Fuel Clad or Reactor Coolant System barrier
- FS1 Loss or potential loss of two fission product barriers
- FG1..... Loss of two fission product barriers with potential loss or loss of the third barrier

System Malfunction

- SU1..... Loss of offsite power to safety systems. Multiple sources of emergency power are available.
- SU2..... Plant operation determined to be outside of plant safety specifications.
- SU3..... Unplanned loss of most Control Room safety system alarm indications.
- SU4..... Unplanned loss of all onsite or offsite communications capabilities.
- SU5..... Unplanned loss of safety related battery power causing difficulty monitoring plant conditions while shutdown.
- SU6..... Indication of degradation or potential loss of the Fuel Clad fission product barrier.
- SU7..... Indication of degradation of Reactor Coolant System fission product barrier.
- SA1..... Loss of all power to safety systems while the plant is shutdown and cooled down.
- SA2..... Reactor failed to automatically shutdown when required. Manual shutdown was successful.
- SA3..... Inability to maintain appropriate cooled down temperature while shutdown.
- SA4..... Difficulty monitoring changing plant conditions due to unplanned loss of most Control Room safety system alarm indications.
- SA5..... Electrical power to safety systems has degraded to a single source.
- SA6..... Indication of potential loss of the Fuel Clad fission product barrier.
- SS1 Loss of all electrical power to safety systems.

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Notifications To Offsite Agencies			
Addendum 7	Suggested Wording for Event Description		Page 2 of 3

- SS2 Reactor failed to automatically shutdown when required. Initial attempts at manual shutdown were not successful.
- SS3 Unplanned loss of safety related battery power compromising the ability to monitor and control plant safety functions.
- SS4 Complete loss of systems required for plant cooldown.
- SS5 Loss of water level in the Reactor Vessel that has or will uncover the fuel in the Reactor Vessel while the plant is shutdown and cooled down.
- SS6 Inability to monitor changing plant conditions due to unplanned loss of most Control Room safety system alarm indications.
- SG1..... Prolonged loss of all electrical power to safety systems which will lead to a loss of all three fission product barriers unless restored.
- SG2..... All attempts to shutdown the reactor have been unsuccessful which may lead to loss of all three fission product barriers.

Abnormal Radiological Levels

- RU1 Unplanned release to the environment of very low levels of radioactivity which exceed effluent limits and indicates a degradation in plant radiological controls.
- RU2 Unexpected increase in plant radiation levels.
- RA1 Unplanned release to the environment of low levels of radioactivity which significantly exceed effluent limits and indicates a substantial degradation in plant radiological controls.
- RA2 Potential damage or damage to spent nuclear fuel outside of the Reactor Vessel.
- RA3 Elevated plant radiation levels impede necessary access to plant operating stations.
- RS1 Actual or projected radiological dose at the site boundary has reached a level which is equal to 10% of the dose which would prompt an offsite protective action recommendation.
- RS2..... An unexpected increase in containment radiation levels indicate a loss or potential loss of two fission product barriers.
- RG1 Actual or projected radiological dose at the site boundary has reached a level which requires an offsite protective action recommendation.
- RG2 An unexpected increase in containment radiation levels indicate a loss of two fission product barriers with potential loss or loss of third barrier.

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Hazards and Other Conditions

- HU1 (Describe destructive event) _____ is affecting normal plant operations.
- HU2 (Fire or Explosion) in the (Protected Area or Switchyard) which affects normal plant operations.
- HU3 (Toxic or Flammable) gasses are affecting normal plant operation.
- HU4 Security event affecting normal plant operations.
- HU5 Conditions exist, not specifically covered by the Station Emergency Plan, which are impacting normal plant operations and, in the judgment of the Emergency Director, warrants declaration of an Unusual Event.
- HA1 (Describe destructive event) _____ may potentially affect safe plant operation.
- HA2 (Fire or Explosion) in a plant vital area that may potentially affect safe operation of the plant.
- HA3 (Toxic or Flammable) gasses may potentially affect safe operation of the plant.
- HA4 Security Event in the Protected Area.
- HA5 Evacuation of the Control Room. Plant controls established at Auxiliary Shutdown Panel.
- HA6 Conditions exist, not specifically covered by the Station Emergency Plan, which may affect safe operation of the plant, and, in the judgment of the Emergency Director, warrants the declaration of an Alert.
- HA7 Airborne Attack Threat.
- HA8 Hostile Action within the Owner Controlled Area.
- HS1 Security event in a vital area which could affect safe shutdown.
- HS2 Evacuation of the Control Room and plant controls cannot be established.
- HS3 Events affecting the ability to shutdown the plant or maintain it in a safe shutdown condition.
- HS4 Site Attack (describe) _____.
- HG1 Security Event Resulting in Loss of Physical Control of the Plant.
- HG2 Conditions exist, not specifically covered by the Station Emergency Plan, which may potentially result in a hazard to the public, and in the judgment of the Emergency Director, warrants the declaration of a General Emergency.

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METEOROLOGICAL SCREEN EM-01 6162/2601 MET TOWER 15 MINUTE AVERAGES	
DATA SHEET 1	MET SCREEN EM-01 6162/2601
Wind Speed MPH	Lower Wind Speed Avg
Wind Direction From__ Degrees	Lower Wind Direction Avg
Stability Class	Calculated from Delta Temp Avg OR Lower Wind Dir SIGMA using Addendum 6

ICS SCREEN EXAMPLE

Wind Speed

MET TOWER 15 MINUTE AVERAGES			
EM-01 6152/2601			
PRIMARY MET TOWER		BACKUP MET TOWER	
UPPER WIND SPEED AVG	12.30 MPH		
UPPER WIND SPEED PEAK	16.60 MPH		
UPPER WIND SPEED SIGMA	1.66 DEG		
UPPER WIND DIR AVG	183.43 DEG		
UPPER WIND DIR SIGMA	5.57 DEG		
LOWER WIND SPEED AVG	7.29 MPH	LOWER WIND SPEED AVG	8.72 MPH
LOWER WIND SPEED PEAK	16.89 MPH	LOWER WIND SPEED PEAK	13.84 MPH
LOWER WIND SPEED SIGMA	2.26 DEG	LOWER WIND DIR AVG	1.85 DEG
LOWER WIND DIR AVG	180.26 DEG	LOWER WIND DIR AVG	184.45 DEG
LOWER WIND DIR SIGMA	12.71 DEG	LOWER WIND DIR SIGMA	11.14 DEG
LOWER TEMP AVG	77.35 DEGF	LOWER TEMP AVG	77.92 DEGF
DELTA TEMP AVG	-0.72 DEGF		
UPPER TEMP AVG	76.63 DEGF		
DEW POINT AVG	75.23 DEGF		
PRECIPITATION	0.01 INCH		
SOLAR RAD AVG	0.09 LANGLEY		
ROOM TEMP AVG	66.38 DEGF	ROOM TEMP AVG	76.41 DEGF

Wind Direction

Delta T (ΔT)

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RECOGNITION CATEGORY F
FISSION PRODUCT BARRIER DEGRADATION
INITIATING CONDITION MATRIX

Determine which combination of the three barriers are lost or have a potential loss and use the following matrix to classify the event. Also, an event (or multiple events) could occur which result in the conclusion that the loss or potential loss is IMMEDIATE (within 1 to 2 hours). In this IMMEDIATE loss situation use judgment and classify as if the thresholds are exceeded.

UNUSUAL EVENT (1-2)	ALERT (3-4)	SITE AREA EMERGENCY (5-8)	GENERAL EMERGENCY (9-10)
FU1 ANY Loss or ANY Potential Loss of Containment FU2 Fuel Clad Degradation See SU6 FU3 RCS Leakage - See SU7	FA1 ANY Loss or ANY Potential Loss of Fuel Clad or RCS	FS1 Loss of BOTH Fuel Clad and RCS OR Potential Loss of BOTH Fuel Clad and RCS <p style="text-align: center;">OR</p> Potential Loss of EITHER Fuel Clad or RCS <p style="text-align: center;">AND</p> Loss of ANY Additional Barrier	FG1 Loss of ANY Two Barriers AND Potential Loss or Loss of Third Barrier

Operating Modes 1 through 4

- Note:
- At the Site Area Emergency level, there must be some ability to dynamically assess how far present conditions are from General Emergency.
 - The ability to escalate to higher emergency classes as an event degrades must be maintained. RCS leakage steadily increasing would represent an increasing risk to public health and safety.

Determination of Emergency Classification Level

Select values from the top of the columns on the next page, which describe specific Fission Product Barrier degradation. Select the higher value that applies from each barrier. Add the values to arrive at the total challenge to the Fission Product Barriers. The emergency classification is determined from the range of values shown in parentheses in the table above.

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RECOGNITION CATEGORY F
FISSION PRODUCT BARRIER DEGRADATION
INITIATING CONDITION MATRIX

EAL	FUEL CLAD		RCS		CONTAINMENT	
	POTENTIAL LOSS (3)	LOSS (4)	POTENTIAL LOSS (3)	LOSS (4)	POTENTIAL LOSS (1)	LOSS (2)
1	CSF Core Cooling - Orange OR Heat Sink - Red ²	CSF Core Cooling - Red	CSF RCS Integrity – Red OR Heat Sink - Red ²	CSF Core Cooling - Yellow with subcooling < 0 °F	CSF Containment - Red OR Core Cooling - Orange > 15 min.	—
2	RCS Activity Failed Fuel Monitor, RT-8039, equal to or greater than 870 µCi/ml	RCS Activity Dose Equivalent Iodine greater than 300 µCi/gm	RCS Leak Rate Unisolable leak exceeding the capacity of one centrifugal charging pump in the normal charging mode.	RCS Leak Rate Leak rate greater than CVCS. System's ability to maintain RCS inventory as indicated by loss of RCS subcooling.	Containment Pressure Greater than 6% hydrogen concentration in containment OR Containment pressure greater than 9.5 psig with neither containment spray nor RCFC running.	Containment Pressure Initial increase followed by rapid unexplained decrease OR Containment pressure or sump level not increasing as expected with LOCA conditions.
3	Core Exit Thermocouple ≥ 708°F	Core Exit Thermocouple 1200°F	SG Tube Rupture SG Tube has ruptured and the primary to secondary leak rate is greater than the capacity of one centrifugal charging pump.	SG Tube Rupture SG Tube is ruptured and has a non-isolable secondary steam release	—	SG Tube Leak Primary to secondary leakage greater than 150 gpd through any one steam generator with direct secondary side leakage to atmosphere
4	Reactor Vessel Water Level Plenum level less than 20%	—	—	—	Containment Bypass VALID increase in reading on area or ventilation monitors in areas adjacent to the containment boundary with a known LOCA inside containment.	Containment Isolation Containment isolation signal AND Valves not closed AND A pathway to the environment exists.
5	—	RCB Rad Monitor RT-8050 or RT-8051 greater than 100 R/hr OR Hatch Monitor greater than 222 mR/hr	—	RCB Rad Monitor RT-8050 or RT-8051 greater than 100 R/hr OR Hatch Monitor greater than 222 mR/hr	RCB Rad Monitor RT-8050 or RT-8051 greater than 1,000 R/hr OR Hatch Monitor greater than 2,222 mR/hr	—

- Note: 1. The Fuel Clad barrier and the RCS barrier are weighted more heavily than the Containment Barrier. Unusual Event Initiating Conditions (ICs) associated with RCS and Fuel Clad barriers are addressed under SU6 and SU7.
2. CSF indicators must be valid; outside the immediate control of the operator.

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**RECOGNITION CATEGORY S
SYSTEMS
INITIATING CONDITION MATRIX**

ELECTRICAL

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
SG1 Prolonged Loss of Offsite and Onsite Power to All Three 4160V AC ESF Busses. Modes: 1-4	<u>EAL-1</u> Entry <u>into</u> 0POP05-EO-EC00, Loss of <u>ALL</u> AC Power, for greater than 15 minutes. <p style="text-align: center;">AND</p> Either of the following conditions exists: <ul style="list-style-type: none"> a. Restoration of at least one 4160V AC ESF Bus within 4 hours is not likely. <li style="text-align: center;">OR b. Degradation of core cooling is indicated by a valid Red or Orange path on the Core Cooling Critical Safety Function Status Tree. 	GE
SS1 Loss of Offsite <u>and</u> Onsite Power to All Three 4160V AC ESF Busses. Modes: 1-4	<u>EAL-1</u> No voltage on all 4160 VAC ESF busses for greater than 15 minutes.	SAE
SS3 Loss of All Class 1E DC Power. Modes: 1-4	<u>EAL-1</u> Less than 107 volts DC on <u>ALL</u> four (4) ESF DC battery busses for greater than 15 minutes.	SAE
SA1 Loss of Offsite <u>and</u> Onsite Power to All Three 4160V AC ESF Busses During Cold Shutdown or Refueling. Modes: 5, 6, and Defueled	<u>EAL-1</u> No voltage on all 4160 VAC ESF busses for greater than 15 minutes.	ALERT

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RECOGNITION CATEGORY S
SYSTEMS
INITIATING CONDITION MATRIX

ELECTRICAL

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
SA5 AC Power Capability to the Three 4160V AC ESF Busses is Reduced to a Single Power Source for Greater than 15 Minutes Such that Any Additional Single Failure Would Result in loss of ALL AC power. Modes: 1-4	<u>EAL-1</u> The following conditions exist: a. Loss of power to the STBY 1 XFMR, STBY 2 XFMR, UAT, and 13.8 KV Emergency bus 1(2)L for greater than 15 minutes. <p style="text-align: center;">AND</p> b. Onsite power capability has been degraded to a single ESF diesel generator capable of supplying power to at least one ESF bus. <u>EAL-2</u> The following conditions exist: a. One of the following offsite power supplies is providing power to <u>ALL</u> of the energized 4160 ESF busses: - STBY 1 XFMR - STBY 2 XFMR - UAT - 13.8 KV Emergency bus 1(2)L <p style="text-align: center;">AND</p> b. ESF DGs 11(21), 12(22), AND 13(23) are not capable of providing power to their respective bus.	ALERT
SU1 Loss of Offsite Power to ESF Busses for Greater than 15 Minutes. Modes: 1-6, Defueled	<u>EAL-1</u> The following conditions exist: a. Loss of power to the STBY 1 XFMR, STBY 2 XFMR, UAT, and 13.8 KV Emergency bus 1(2)L for greater than 15 minutes. <p style="text-align: center;">AND</p> b. At least 2 ESF DGs are supplying power to their respective busses.	UE
SU5 Unplanned Loss of Class 1E DC Power During Cold Shutdown or Refueling for Greater than 15 Minutes. Modes: 5 and 6	<u>EAL-1</u> Loss of ESF DC Power to Channel 1 and Channel 4 based on Battery Bus Voltage less than 107 volts DC for greater than 15 minutes.	UE

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**RECOGNITION CATEGORY S
SYSTEMS
INITIATING CONDITION MATRIX**

REACTOR PROTECTION/TECHNICAL SPECIFICATION SHUTDOWNS

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
SG2 Failure of the Reactor Protection System to Complete an Automatic Reactor Trip. AND Manual Reactor Trip Was <u>NOT</u> Successful. AND There is Indication of an Extreme Challenge to the Ability to Cool the Core. Modes: 1 and 2	<u>EAL-1</u> Entry into 0POP05-EO-FRS1, Response to Nuclear Power Generation – ATWS. AND Either of the following: a. Degradation of core cooling is indicated by a valid Red path on the Core Cooling Critical Safety Function Status Tree. OR b. Degradation of heat sink is indicated by a valid Red path on the Heat Sink Critical Safety Function Status Tree.	GE
SS2 Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Trip Once a Reactor Protection System Set point Has Been Exceeded. AND Manual Reactor Trip Was <u>NOT</u> Successful. Modes: 1 and 2	<u>EAL-1</u> Entry into 0POP05-EO-FRS1, Response to Nuclear Power Generation – ATWS.	SAE
SA2 Failure of Reactor Protection System Instrumentation To Complete or Initiate an Automatic Reactor Trip Once a Reactor Protection System Set point Has Been Exceeded and Manual Reactor Trip Was Successful from the Control Room. Modes: 1-3	<u>EAL-1</u> Reactor Protection System <u>set point exceeded</u> with <u>NO</u> automatic trip. AND A manual reactor trip was <u>required</u> for plant shutdown.	ALERT
SU2 Operation Outside the Plant Safety Envelope As Defined By Technical Specifications. Modes: 1-4	<u>EAL-1</u> The plant cannot be brought to the required operating mode within Technical Specifications LCO Action Statement Time.	UE

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**RECOGNITION CATEGORY S
SYSTEMS**

INITIATING CONDITION MATRIX

COMMUNICATIONS/ALARMS/ASSESSMENT

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
SS6 Inability to Monitor a Significant Transient in Progress. Modes: 1-4	<u>EAL-1</u> The following conditions exist: a. Loss of Control Room Indicators and Annunciators associated with Safety Systems. AND b. Compensatory Non-Alarming Indications are Unavailable (e.g. QDPS, ICS, ERFDADS, Control Board, or Local Alarms). AND c. Significant transient in progress.	SAE
SA4 Unplanned Loss of Most Control Room Safety System Annunciation or Indication with Either (1) a Significant Transient In Progress, or (2) Compensatory Indicators are Unavailable. Modes: 1-4	<u>EAL-1</u> The following conditions exist: a. Loss of most (>50%) of Control Room Safety System annunciators or indicators for greater than 15 minutes. AND b. The Shift Supervisor determines that the loss of the annunciators or indicators requires increased surveillance of compensatory indicators (e.g. Control Board Indicators, Local Indicators, QDPS, ICS, ERFDADS) to safely operate the unit. AND c. Annunciator or Indicator Loss does not result from planned action. AND d. Either of the following conditions exist: 1. A significant plant transient is in progress. OR 2. Compensatory indications are unavailable or cannot be adequately monitored with on-shift personnel.	ALERT

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RECOGNITION CATEGORY S
SYSTEMS
INITIATING CONDITION MATRIX

COMMUNICATIONS/ALARMS/ASSESSMENT

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
SU3 Unplanned Loss of Most Control Room Safety System Annunciation or Indication for Greater than 15 Minutes. Modes: 1-4	<u>EAL-1</u> The following conditions exist: <ul style="list-style-type: none"> a. Loss of most (>50%) of Control Room Safety System annunciators or indicators for greater than 15 minutes. <p style="text-align: center;">AND</p> <ul style="list-style-type: none"> b. Compensatory indications are available and can be adequately monitored with on-shift personnel. <p style="text-align: center;">AND</p> <ul style="list-style-type: none"> c. The Shift Supervisor determines that the loss of the annunciators or indicators requires increased surveillance of compensatory indications (e.g. Control Board Indicators, Local Indicators, QDPS, ICS, ERFDADS) to safely operate the unit. <p style="text-align: center;">AND</p> <ul style="list-style-type: none"> d. Annunciator or indicator loss is not the result of planned action. 	UE
SU4 Unplanned Loss of All Onsite or Offsite Communications Capabilities. Modes: At all times	<u>EAL-1</u> Unplanned loss of <u>ALL</u> onsite telephone, radio and headset communications capability affecting the ability to perform routine operations. <u>EAL 2</u> Unplanned loss of <u>ALL</u> onsite to offsite telephone and FAX communications capability: Plant telephone system, DPS/MCSO Ringdown Line, Texas Genco LLC Line, STP Communicator (QSE) Ringdown Line, NRC ENS Line.	UE

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RECOGNITION CATEGORY S
SYSTEMS
INITIATING CONDITION MATRIX

SHUTDOWN MAINTENANCE

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
SS4 Complete Loss of Any Function Needed to Achieve or Maintain Hot Shutdown. Modes: 1-4	<u>EAL-1</u> Modes 1-3 - Loss of all feedwater function (main, startup, and auxiliary) indicated by SG narrow range level less than 14% [34%] in <u>ALL</u> SGs <u>AND</u> total feedwater flow less than 576 gpm. <u>EAL-2</u> Mode 4 - Loss of RHR function indicated by entry into 0POP04-RH-0001, Loss of Residual Heat Removal, <u>AND</u> loss of all feedwater function (main, startup, and auxiliary) indicated by SG narrow range level less than 14% [34%] in <u>ALL</u> SGs <u>AND</u> total feedwater flow less than 576 gpm.	SAE
SS5 Loss of Water Level in the Reactor Vessel That Has or Will Uncover Fuel in the Reactor Vessel. Modes: 5 and 6	<u>EAL-1</u> Loss of Reactor Vessel Water Level as indicated by: <ul style="list-style-type: none"> a. Loss of all Decay Heat Removal Cooling as determined by entry into, 0POP04-RH-0001, Loss of Residual Heat Removal. <p style="text-align: center;">AND</p> <ul style="list-style-type: none"> b. The Core is or will be uncovered as indicated by: RCS Narrow Range Hot Leg Level less than -2 inches (Elev. 32'-1"). 	SAE

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**RECOGNITION CATEGORY S
SYSTEMS
INITIATING CONDITION MATRIX**

SHUTDOWN MAINTENANCE

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
SA1 Loss of Offsite <u>and</u> Onsite Power to All Three 4160V AC ESF Busses During Cold Shutdown or Refueling. Modes: 5, 6, and Defueled	<u>EAL-1</u> Loss of <u>ALL ONSITE AND OFFSITE</u> power to <u>ALL</u> three 4160 V AC ESF Busses for greater than 15 minutes.	ALERT
SA3 Inability to Maintain Plant in Cold Shutdown. Modes: 5 and 6	<u>EAL-1</u> The following conditions exist: a. Less than 2 RHR loops are functional. AND b. Temperature increase that either: Results in Tavg exceeding 200°F. OR Results in uncontrolled temperature rise, causing Tavg to approach 200°F.	ALERT
SU5 Unplanned Loss of Class 1E DC Power during Cold Shutdown or Refueling for Greater than 15 Minutes. Modes: 5 and 6	<u>EAL 1</u> Loss of ESF DC Power to Channel 1 and Channel 4 based on Battery Bus Voltage less than 107 volts DC for greater than 15 minutes.	UE

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**RECOGNITION CATEGORY S
SYSTEMS
INITIATING CONDITION MATRIX**

FISSION PRODUCT BARRIER - THRESHOLD LEVELS

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
SA6 Fuel Clad Degradation. Modes: 1-6	<u>EAL-1</u> Failed Fuel Monitor, RT-8039, indicates greater than or equal to 870 $\mu\text{Ci/ml}$ and this reading is not the result of a crud burst as confirmed by a grab sample. <u>EAL-2</u> Dose Equivalent Iodine (DEI) sample greater than 300 $\mu\text{Ci/gm}$.	ALERT
SU6 Fuel Clad Degradation. Modes: 1-6	<u>EAL-1</u> Failed Fuel Monitor, RT-8039, indicates greater than or equal to 300 $\mu\text{Ci/ml}$ and this reading is not the result of a crud burst as confirmed by a grab sample. <u>EAL-2</u> Dose Equivalent Iodine (DEI) sample greater than Technical Specification limitations.	UE
SU7 RCS Leakage. Modes: 1-4	<u>EAL-1</u> Unidentified or pressure boundary leakage greater than 10 gpm. <u>EAL-2</u> Identified leakage greater than 25 gpm.	UE

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RECOGNITION CATEGORY R
RADIOLOGICAL
INITIATING CONDITION MATRIX

RADIOLOGICAL RELEASE

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
RG1 Site Boundary Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity that Exceeds 1,000 mrem TEDE or 5,000 mrem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology. Modes: At all times	<p><u>EAL 1</u></p> <p>A valid reading on one or more of the following monitors that exceeds the value shown.</p> <p style="text-align: center;">AND</p> <p>An offsite dose assessment using 0ERP01-ZV-TP01, Offsite Dose Calculations, using actual meteorology cannot be completed within 15 minutes.</p> <p>If an offsite dose assessment is completed, refer to EAL-2.</p> <p style="text-align: center;">UNIT VENT</p> <p style="text-align: center;">RT-8010B > 2.00 E+8 µCi/sec</p> <p style="text-align: center;">*MAIN STEAM LINE</p> <p style="text-align: center;">RT-8046 > 50 µCi/ml RT-8047 > 50 µCi/ml RT-8048 > 50 µCi/ml RT-8049 > 50 µCi/ml</p> <p><u>EAL-2</u></p> <p>Dose assessment indicates dose consequences greater than 1,000 mrem TEDE and/or 5,000 mrem thyroid CDE.</p> <p><u>EAL-3</u></p> <p>Field survey results indicate site boundary dose rates exceeding 1,000 mrem/hr expected to continue for more than one hour;</p> <p style="text-align: center;">OR</p> <p>Analysis of field survey samples indicate thyroid dose commitment of 5,000 mrem for one hour of inhalation.</p>	GE

*Main Steam Line Monitors RT-8046 thru RT-8049 assumes a Gap Inventory and a steam release into the environment of 1.05 E+6 lbs./hr

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RECOGNITION CATEGORY R
RADIOLOGICAL
INITIATING CONDITION MATRIX

RADIOLOGICAL RELEASE

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
RS1 Site Boundary Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 100 mrem TEDE or 500 mrem Thyroid CDE for the Actual or Projected Duration of the Release. Modes: At all times	<u>EAL-1</u> A valid reading on one or more of the following monitors that exceeds or is expected to exceed the value shown. <p style="text-align: center;">AND</p> An offsite dose assessment using 0ERP01-ZV-TP01, Offsite Dose Calculations, using actual meteorology cannot be completed within 15 minutes. If an offsite dose assessment is completed, refer to EAL-2. <p style="text-align: center;">UNIT VENT</p> RT-8010B > 2.00 E+7 µCi/sec <p style="text-align: center;">*MAIN STEAM LINE</p> RT-8046 > 5 µCi/ml RT-8047 > 5 µCi/ml RT-8048 > 5 µCi/ml RT-8049 > 5 µCi/ml <u>EAL-2</u> Dose assessment indicates dose consequences greater than 100 mrem TEDE and/or 500 mrem thyroid CDE. <u>EAL-3</u> Field survey results indicate site boundary dose rates exceeding 100 mrem/hr expected to continue for more than one hour; <p style="text-align: center;">OR</p> Analysis of field survey samples indicate thyroid dose commitment of 500 mrem for one hour of inhalation.	SAE

*Main Steam Line Monitors RT-8046 thru RT-8049 assumes a Gap Inventory and a steam release into the environment of 1.05 E+6 lbs./hr

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RECOGNITION CATEGORY R
RADIOLOGICAL
INITIATING CONDITION MATRIX

RADIOLOGICAL RELEASE

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
RA1 Any Unplanned Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds 25 Times the Unusual Event EALs at the site boundary for 15 Minutes or Longer. Modes: At all times	<p><u>EAL-1</u></p> <p>A valid reading on one or more of the following monitors that exceeds the value shown indicating that the release may have exceeded the emergency criterion and indicates the need to assess the release with 0PSP07-VE-0005, Unit Vent Effluent Permit.</p> <p style="text-align: center;">UNIT VENT</p> <p style="text-align: center;">RT-8010B > 2.50 E+6 µCi/sec for 15 minutes</p> <p><u>EAL-2</u></p> <p>Confirmed sample analysis for gaseous releases indicates concentrations or release rates with a release duration of 15 minutes or longer in excess of 2.50 E-5 µCi/ml at the site boundary.</p> <p><u>EAL-3</u></p> <p>Confirmed sample analysis of liquid releases indicates concentration or release rates in excess of 25 times the Effluent Concentration Limit at the site boundary.</p> <p><u>EAL-4</u></p> <p>Site boundary radiation dose rate ≥ 3 mrem/hr for greater than 15 minutes based on dose projections or field team measurements.</p>	ALERT

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RECOGNITION CATEGORY R
RADIOLOGICAL
INITIATING CONDITION MATRIX
RADIOLOGICAL RELEASE

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
RU1 Any Unplanned Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds Two (2) Times the ODCM Limit at the site boundary for expected duration of 60 Minutes or Longer. Modes: At all times	<p><u>EAL-1</u></p> <p>A valid reading on one or more of the following monitors that exceeds the value shown indicating that the release may have exceeded the emergency criterion and indicates the need to assess the release with 0PSP07-VE-0005, Unit Vent Effluent Permit.</p> <p style="text-align: center;">UNIT VENT</p> <p style="text-align: center;">RT-8010B > 1.00 E+5 µCi/sec for 60 minutes</p> <p><u>EAL-2</u></p> <p>Confirmed sample analyses for gaseous releases indicates concentrations or release rates with a release duration of 60 minutes or longer in excess of 1.00 E-6 µCi/ml (two times the Effluent Concentration Limit*) at the site boundary.</p> <p><u>EAL-3</u></p> <p>Confirmed sample analysis for liquid releases indicates concentration or release rates with a release duration of 60 minutes or longer in excess of two (2) times the Effluent Concentration Limit at the site boundary.</p> <p><u>EAL-4</u></p> <p>Valid dose rate projection ≥ 0.1 mrem/hr at the site boundary for 60 minutes or longer.</p>	UE

* The Effluent Concentration Limit for Xe-133 is 5.00 E-7 µCi/ml.

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**RECOGNITION CATEGORY R
RADIOLOGICAL
INITIATING CONDITION MATRIX**

RADIATION LEVELS

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
RG2 Unexpected Increase in Containment Radiation. Modes: 1-4	<u>EAL-1</u> Valid reading on RCB High Range Monitors, RT-8050 or RT-8051 greater than 1,000 R/hr. OR Valid reading on Hatch Monitor greater than 2,222 mR/hr.	GE
RS2 Unexpected Increase in Containment Radiation Levels. Modes: 1-4	<u>EAL-1</u> Valid reading on RCB High Range Monitors, RT-8050 or RT-8051 greater than 100 R/hr. OR Valid reading on Hatch Monitor greater than 222 mR/hr.	SAE
RA2 Major Damage to Irradiated Fuel or Loss of Water Level that has or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel. Modes: At all times	<u>EAL-1</u> Valid readings on one or more of the following monitors: FHB Exhaust, RT-8035 > 5.00 E-2 µCi/ml FHB Exhaust, RT-8036 > 5.00 E-2 µCi/ml Area Monitor (68' FHB), RT-8090 > 5,000 mR/hr Area Monitor (68' RCB), RT-8099 > 5,000 mR/hr <u>EAL-2</u> Irradiated fuel uncovered (actual or potential) based on observation OR water level below top of fuel storage racks.	ALERT
RA3 Release of Radioactive Material or Increases in Radiation Levels that Impedes Operation of Systems Required to Maintain Safe Operation or to Establish or Maintain Cold Shutdown. Modes: At all times	Valid Readings on any of the following Area Monitors: <u>EAL-1</u> RT-8066 > 15 mR/hr (35' EAB) <u>EAL-2</u> RT-8058 > 5.00 E+3 mR/hr (10' MAB) RT-8060 > 5.00 E+3 mR/hr (10' MAB) RT-8061 > 5.00 E+3 mR/hr (10' MAB) RT-8062 > 5.00 E+3 mR/hr (10' MAB) RT-8063 > 5.00 E+3 mR/hr (29' MAB) RT-8077 > 5.00 E+3 mR/hr (60' MAB) RT-8084 > 5.00 E+3 mR/hr (-21' FHB) RT-8085 > 5.00 E+3 mR/hr (-21' FHB) RT-8086 > 5.00 E+3 mR/hr (-21' FHB) RT-8087 > 5.00 E+3 mR/hr (-21' FHB) RT-8090 > 5.00 E+3 mR/hr (68' FHB)	ALERT

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RECOGNITION CATEGORY R
RADIOLOGICAL
INITIATING CONDITION MATRIX

RADIATION LEVELS

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS																																																			
RU2 Unexpected Increase in Plant Radiation Levels or Airborne Concentrations. Modes: At all times	<p><u>EAL-1</u></p> <p>Valid Readings on any of the following Area Monitors greater than 1,000 Times 24 hr. average.</p> <table> <tr> <td>RT-8052, (-11' RCB)</td><td>RT-8069, (OSC)</td><td>RT-8086, (-21' FHB)</td></tr> <tr> <td>RT-8053, (-11' RCB)</td><td>RT-8070, (41' MAB)</td><td>RT-8087, (-21' FHB)</td></tr> <tr> <td>RT-8054, (19' RCB)</td><td>RT-8071, (41' MAB)</td><td>RT-8088, (30' FHB)</td></tr> <tr> <td>RT-8055, (68' RCB)</td><td>RT-8072, (41' MAB)</td><td>RT-8089, (68' FHB)</td></tr> <tr> <td>RT-8056, (52' RCB)</td><td>RT-8073, (41' MAB)</td><td>RT-8090, (68' FHB)</td></tr> <tr> <td>RT-8057, (10' EAB)</td><td>RT-8074, (41' MAB)</td><td>RT-8091, (68' FHB)</td></tr> <tr> <td>RT-8058, (10' MAB)</td><td>RT-8075, (41' MAB)</td><td>RT-8092, (29' TGB)</td></tr> <tr> <td>RT-8059, (10' MAB)</td><td>RT-8076, (60' EAB)</td><td>RT-8093, (29' TGB)</td></tr> <tr> <td>RT-8060, (10' MAB)</td><td>RT-8077, (60' MAB)</td><td>RT-8094, (TSC)</td></tr> <tr> <td>RT-8061, (10' MAB)</td><td>RT-8078, (60' MAB)</td><td>RT-8096, (EOF)</td></tr> <tr> <td>RT-8062, (10' MAB)</td><td>RT-8079, (60' MAB)</td><td>RT-8097, (68' FHB)</td></tr> <tr> <td>RT-8063, (29' MAB)</td><td>RT-8080, (41' MAB)</td><td>RT-8098, (60' MAB)</td></tr> <tr> <td>RT-8064, (29' MAB)</td><td>RT-8081, (68' FHB)</td><td>RT-8099, (60' RCB)</td></tr> <tr> <td>RT-8065, (29' MAB)</td><td>RT-8082, (60' MAB)</td><td>RT-8100, (35' EAB)</td></tr> <tr> <td>RT-8066, (35' EAB)</td><td>RT-8083, (41' MAB)</td><td>RT-8101, (35' EAB)</td></tr> <tr> <td>RT-8067, (35' EAB)</td><td>RT-8084, (-21' FHB)</td><td></td></tr> <tr> <td>RT-8068, (41' MAB)</td><td>RT-8085, (-21' FHB)</td><td></td></tr> </table> <p><u>EAL-2</u></p> <p>*Uncontrolled loss of water level in the Spent Fuel Pool and Fuel Transfer Canal with all irradiated fuel assemblies remaining covered by water.</p> <p><u>EAL-3</u></p> <p>*Uncontrolled decrease of water level in the Refueling Cavity/ICSA with all irradiated fuel assemblies remaining covered with water. (Mode 6 Only).</p>	RT-8052, (-11' RCB)	RT-8069, (OSC)	RT-8086, (-21' FHB)	RT-8053, (-11' RCB)	RT-8070, (41' MAB)	RT-8087, (-21' FHB)	RT-8054, (19' RCB)	RT-8071, (41' MAB)	RT-8088, (30' FHB)	RT-8055, (68' RCB)	RT-8072, (41' MAB)	RT-8089, (68' FHB)	RT-8056, (52' RCB)	RT-8073, (41' MAB)	RT-8090, (68' FHB)	RT-8057, (10' EAB)	RT-8074, (41' MAB)	RT-8091, (68' FHB)	RT-8058, (10' MAB)	RT-8075, (41' MAB)	RT-8092, (29' TGB)	RT-8059, (10' MAB)	RT-8076, (60' EAB)	RT-8093, (29' TGB)	RT-8060, (10' MAB)	RT-8077, (60' MAB)	RT-8094, (TSC)	RT-8061, (10' MAB)	RT-8078, (60' MAB)	RT-8096, (EOF)	RT-8062, (10' MAB)	RT-8079, (60' MAB)	RT-8097, (68' FHB)	RT-8063, (29' MAB)	RT-8080, (41' MAB)	RT-8098, (60' MAB)	RT-8064, (29' MAB)	RT-8081, (68' FHB)	RT-8099, (60' RCB)	RT-8065, (29' MAB)	RT-8082, (60' MAB)	RT-8100, (35' EAB)	RT-8066, (35' EAB)	RT-8083, (41' MAB)	RT-8101, (35' EAB)	RT-8067, (35' EAB)	RT-8084, (-21' FHB)		RT-8068, (41' MAB)	RT-8085, (-21' FHB)		UE
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*Outside the immediate control of the operator

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RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX

SECURITY

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HG1 Security Event Resulting in Loss of Physical Control of the Facility. Modes: 1-6	<u>EAL-1</u> A HOSTILE FORCE has taken control of plant equipment such that plant personnel are unable to operate equipment required to maintain safety functions.	GE
HS1 Security Event in the Vital Area. Modes: At all times	<u>EAL-1</u> Intrusion into a Vital Area by a hostile force. <u>EAL-2</u> Security Emergency that in the judgment of the Emergency Director could prevent safe shutdown or interfere with maintaining safe shutdown conditions. <u>EAL-3</u> Confirmed presence of an explosive device in a Vital Area.	SAE
HS4 Site Attack. Modes: At all times	<u>EAL-1</u> A notification from Security that an armed attack, explosive attack, airliner impact, or other HOSTILE ACTION is occurring or has occurred within the protected area.	SAE

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RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX

SECURITY

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HA4 Security Event in the Protected Area. Modes: At all times	<u>EAL-1</u> Security Emergency as determined from the Safeguards Contingency Plan.	ALERT
HA7 Notification of an Airborne Attack Threat. Modes: At all times	<u>EAL-1</u> A validated notification from NRC of an airliner attack threat less than 30 minutes away.	ALERT
HA8 Notification of HOSTILE ACTION within the Owner Controlled Area. Modes: At all times	<u>EAL-1</u> A notification from the Security Force that an armed attack, explosive attack, airliner impact, or other HOSTILE ACTION is occurring or has occurred within the Owner Controlled Area.	ALERT
HU4 Confirmed Security Event Which Indicates a Potential Degradation in the Level of Safety of the Plant. Modes: At all times	<u>EAL-1</u> Security Alert as defined by the Safeguards Contingency Plan. <u>EAL-2</u> A credible site-specific security threat notification (2002 ICM Order). <u>EAL-3</u> A validated notification from NRC providing information of an aircraft threat (2005 Security Advisory)	UE

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RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX

FIRE/EXPLOSION

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HA2 Fire or Explosion in a Vital Area Potentially Affecting Safe Shutdown or Decay Heat Removal. Modes: See specific EAL	<p><u>EAL-1</u></p> <p>Fire or Explosion potentially affecting Safe Shutdown Equipment or systems required for decay heat removal.</p> <p style="text-align: center;">(Modes: 1-6)</p> <p>The following conditions exist:</p> <p style="padding-left: 40px;">a. Fire or explosion in any of the following areas:</p> <ul style="list-style-type: none"> • Mechanical/Electrical Auxiliary Building • Reactor Containment Building • Isolation Valve Cubicle • Diesel Generator Building • Essential Cooling Water Intake Structure <p style="text-align: center;">AND</p> <p style="padding-left: 40px;">b. Affected system parameter indications show degraded performance or plant personnel report visible damage to systems structures or components within the specified area required for safe shutdown.</p> <p><u>EAL-2</u></p> <p>Fire or explosion in one or more of the areas listed below which impacts ability to maintain cooling for spent fuel.</p> <ul style="list-style-type: none"> • Fuel Handling Building • Mechanical/Electrical Auxiliary Building <p style="text-align: center;">(Modes: At all times)</p>	ALERT

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RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX

FIRE/EXPLOSION

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HU2 Fire or Explosion in the Protected Area or Switchyard which Affects Normal Operation. Modes: At all times	<u>EAL-1</u> Fire within the areas below which is not under control within 15 minutes of initial notification. <u>EAL-2</u> Explosion in or adjacent to any of the following areas which damages equipment necessary for normal plant operation. Areas considered for EAL-1 and EAL-2: <ul style="list-style-type: none"> • Switchyard • Turbine Generator Building • Mechanical/Electrical Auxiliary Building • Fuel Handling Building • Reactor Containment Building • Essential Cooling Water Intake Structure • Isolation Valve Cubicle • Diesel Generator Building • Circulating Water Intake Structure 	UE

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RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX

TOXIC/FLAMMABLE GAS

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HA3 Toxic/Flammable Gases Potentially Affecting Safe Operation. Modes: At all times	<u>EAL-1</u> Confirmed entry of toxic gas into Control Room envelope. <u>EAL-2</u> Uncontrolled entry of flammable gas into a Vital Area. <u>EAL-3</u> Uncontrolled entry of toxic gas into the facility in life threatening concentration or into a Vital Area where lack of access constitutes a safety problem.	ALERT
HU3 Toxic/Flammable Gases Affecting Plant Operation. Modes: At all times	<u>EAL-1</u> Onsite toxic or flammable gas release which requires evacuation of areas within the Protected Area. <u>EAL-2</u> Report by Local, County or State Officials for potential evacuation of site personnel based on offsite event.	UE

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RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX
NATURAL OR DESTRUCTIVE PHENOMENA

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HA1 Natural or Destructive Phenomena Potentially Affecting Safe Operation. Modes: At all times	<p><u>EAL-1</u> Seismic motion exceeding Operating Basis Earthquake (OBE) as indicated by Seismic monitor alarm and confirmed by 0POP04-SY-0001.</p> <p><u>EAL-2</u> Tornado or high wind causing visible structural damage to any of the following plant structures:</p> <ul style="list-style-type: none"> • Reactor Containment Building • ECW Intake Structure • Mechanical/Electrical Auxiliary Building • Isolation Valve Cubicle • Fuel Handling Building • Diesel Generator Building <p><u>EAL-3</u> Entry of floodwater into safety related structures such that the function of safety related equipment is jeopardized.</p> <p><u>EAL-4</u> Predicted or actual breach of Main Cooling Reservoir retaining dike along North Wall.</p> <p><u>EAL-5</u> Vehicle crash affecting a plant Vital Area.</p> <p><u>EAL-6</u> Turbine failure generated missiles result in any visible structural damage to or penetration of any of the following plant areas:</p> <ul style="list-style-type: none"> • Reactor Containment Building • ECW Intake Structure • Mechanical/Electrical Auxiliary Building • Isolation Valve Cubicle • Fuel Handling Building • Diesel Generator Building 	ALERT

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RECOGNITION CATEGORY H

HAZARDS

INITIATING CONDITION MATRIX

NATURAL OR DESTRUCTIVE PHENOMENA

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HU1 Natural or Destructive Phenomena Affecting Plant Operations. Modes: At all times	<u>EAL-1</u> Earthquake detected by seismic monitoring system and confirmed by OPOP04-SY-0001, Seismic Event. <u>EAL-2</u> Tornado striking facilities within the Protected Area. <u>EAL-3</u> Shutdown of the facility required due to actual or predicted natural phenomenon in accordance with OPOP04-ZO-0002, Natural or Destructive Phenomena Guidelines. <u>EAL-4</u> Vehicle crash into plant structures or systems within the Protected Area. <u>EAL-5</u> Report of main turbine failure resulting in casing penetration. <p style="text-align: center;">OR</p> damage to turbine or generator seals.	UE

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RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX

CONTROL ROOM EVACUATION

INITIATING CONDITIONS	EMERGENCY ACTION LEVEL	CLASS
HS2 Control Room Evacuation and Plant Control Cannot be Established. Modes: 1-6	<u>EAL-1</u> 1. The following conditions exist: a. Control Room evacuation has been initiated per 0POP04-ZO-0001, Control Room Evacuation. <p style="text-align: center;">AND</p> b. Control of the plant cannot be established by completion of step 12 of 0POP04-ZO-0001 within 15 minutes.	SAE
HA5 Control Room Evacuation. Modes: 1-6	<u>EAL-1</u> The Control Room is evacuated and the plant is being controlled per 0POP04-ZO-0001, Control Room Evacuation.	ALERT

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RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX

MISCELLANEOUS EVENTS

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HG2 Miscellaneous Events which May Potentially Result in a Hazard to the Public. Modes: At all times	<u>EAL-1</u> Other conditions exist which in the judgment of the Emergency Director indicate: a. Actual or imminent substantial core degradation with potential for loss of containment. <p style="text-align: center;">OR</p> b. Potential for uncontrolled radionuclide releases. These releases can reasonably be expected to exceed EPA PAG plume exposure levels outside the site boundary.	GE
HS3 Miscellaneous Events Affect the Ability to Shutdown the Plant or Maintain it in a Safe Shutdown Condition. Modes: At all times	<u>EAL-1</u> Other conditions exist which in the judgment of the Emergency Director indicate actual or likely major failures of plant functions needed for protection of the public.	SAE
HA6 Miscellaneous Events Potentially Affecting Safe Plant Operation. Modes: At all times	<u>EAL-1</u> Essential Cooling Pond (ECP) level less than 23.0 ft. mean sea level with no make-up available. <u>EAL-2</u> Other conditions exist which in the judgment of the Emergency Director indicate that plant safety systems may be degraded and that increased monitoring of plant functions is warranted.	ALERT
HU5 Miscellaneous Events Affecting Plant Operations. Modes: At all times	<u>EAL-1</u> Essential Cooling Pond (ECP) level less than 25.0 ft. mean sea level. <u>EAL-2</u> Other conditions exist which in the judgment of the Emergency Director indicate a potential degradation of the level of safety of the plant.	UE

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Notifications To Offsite Agencies			
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STP 1690 (04/05)		SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION	
Rev. 14		OFFSITE NOTIFICATION MESSAGE FORM	
Roll call: _____			
DPS Pierce		Matagorda County	Time _____
A L W A Y S C O M P L E T E	1. Communicator: (name) <u>Joe Communicator</u>		“CR” should be checked (Non-Critical)
	<input checked="" type="checkbox"/> Unit 1 <input type="checkbox"/> Unit 2		
	2. <input type="checkbox"/> This is a drill <input checked="" type="checkbox"/> This is NOT a drill		
	3. Message Number <u>1</u> Originating From: <input type="checkbox"/> CR <input type="checkbox"/> TSC <input checked="" type="checkbox"/> EOF		
	4. Emergency Classification: <input checked="" type="checkbox"/> New <input type="checkbox"/> Unchanged		
	Declared at: _____ Date: <u>Today</u> Time: <u>5 minutes ago</u>		
	<input type="checkbox"/> Unusual Event <input checked="" type="checkbox"/> Alert <input type="checkbox"/> Site Area Emergency <input type="checkbox"/> General Emergency <input type="checkbox"/> Terminated		
	5. Radiological release in progress: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	6. Recommended Protective Actions: <input type="checkbox"/> New <input checked="" type="checkbox"/> Unchanged		“New” should be checked (Non-Critical)
	A. <input checked="" type="checkbox"/> No recommended protective actions at this time		
	B. <input type="checkbox"/> Recommended protective actions are: _____		
	“Site Area Emergency” should be checked (Critical)		
	7. Department of State Health Services (DSHS) concurs with recommendations in 6 above:		
	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not Contacted <input type="checkbox"/> No		
	8. Event Description: <input checked="" type="checkbox"/> New <input type="checkbox"/> Unchanged		
	Classification Path/Initiating Condition: <u>SS2</u>		
	Explain: <u>Reactor failed to automatically shutdown when required. Initial attempts at manual shutdown were not successful</u>		
F O L L O W U P	9. Meteorological data: <input type="checkbox"/> New <input type="checkbox"/> Unchanged		
	A. Wind direction from _____ Degrees Wind speed _____ MPH		
	B. Stability Class (Check One): <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/> G		
	C. Precipitation (Check One): <input type="checkbox"/> None <input type="checkbox"/> Rain <input type="checkbox"/> Sleet <input type="checkbox"/> Snow <input type="checkbox"/> Hail <input type="checkbox"/> Fog		
	10. Release Involves: <input type="checkbox"/> New <input type="checkbox"/> Unchanged		
	A. <input type="checkbox"/> Radiological release in progress: Expected Duration: _____ hrs. Started: Date _____ Time _____		
	B. <input type="checkbox"/> Radiological release which has ended: Duration: _____ hrs. Terminated: Date _____ Time _____		
	11. Remarks: _____		
A L L	12. Approved: _____ Date _____ Time _____		
	(Print/Sign) Emergency Director		

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: **TRANSFER TO HOT LEG RECIRCULATION**

JPM NO.: **C1**

REVISION: **1**

LOCATION: **UNIT 1 OR UNIT 2 CONTROL ROOM OR THE SIMULATOR**

JOB PERFORMANCE MEASURE WORKSHEET
SOUTH TEXAS PROJECT

JPM Title: TRANSFER TO HOT LEG RECIRCULATION

JPM No.: C1

Rev. No.: 1

STP Task: 81637 - Transfer to Hot Leg Recirculation

STP Objective: 81637 - Transfer to Hot Leg Recirculation IAW 0POP05-E0-ES14

**Related
K/A Reference:** EPE 011 EA1.11 [4.2/4.2] - Ability to operate and monitor the following as they apply to a Large Break LOCA: Long-term cooling of the core.

References: 0POP05-E0-ES14, Rev. 6, Transfer to Hot Leg Recirculation

**Task Normally
Completed By:** RO

**Method
of Testing:** Static Performance

**Location
of Testing:** Unit 1 or Unit 2 Control Room or the Simulator

**Time
Critical Task:** NO

**Alternate
Path JPM:** NO

**Validation
Time:** 30 minutes

Required Materials (Tools/Equipment): Procedure copy if being done in the plant. None needed if being done in the simulator.

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A large break LOCA occurred 5.5 hours ago. The control room operators have completed 0POP05-EO-EO10 and are evaluating long term plant status.

Adverse Containment Conditions exist.

INITIATING CUE:

The Unit Supervisor directs you to transfer to hot leg recirculation on SI trains A and B in accordance with 0POP05-EO-ES14, Transfer to Hot Leg Recirculation.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

The Performer Transfers SI Recirculation Flow from Cold Leg to Hot Leg for Trains A and B Per 0POP05-EO-ES14.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

Working copy of 0POP05-EO-ES14, TRANSFER TO HOT LEG RECIRCULATION if this JPM is being performed in the plant.

NOTES:

This JPM to be performed statically in either Unit 1 or Unit 2 Control Room or the Simulator

SIMULATOR SETUP (if performed in the Simulator)

1. Ensure Radio volume for both stations are set to a reasonable level.
2. Ensure the simulator PA buttons on the communications consoles are taped to help eliminate usage.
3. Reset to the 100% power Storepoint and verify:
 - Step counter position annunciator light is out
 - Red light at the end of CP-010 is out
 - ICS annunciators have stopped counting up
4. Check and Clean the following procedures in the simulator (JPM specific)
 - 0POP05-EO-ES14, Transfer to Hot Leg Recirculation
5. Place simulator in run, clear/reset any alarms, then GO TO FREEZE

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

SAT/UNSAT Performance Step: 1

Start time: _____

Obtain a copy of 0POP05-EO-ES14, Transfer to Hot Leg Recirculation

Standard:

Obtains a copy of 0POP05-EO-ES14, Transfer to Hot Leg Recirculation.

Comment:

A procedural handout is provided if this JPM is being done in the plant. If this JPM is being performed in the Simulator, the candidate will use procedures located there.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Check three SI trains operable

Standard:

Three SI trains checked operable.

Comment:

Cue:

LHSI pumps (all) Red Light - LIT
HDR PRESS - 300 psig
Tc INJ FLOW - 2900 gpm

HHSI pumps (all) Red Light - LIT
DISCH PRESS - 900 psig
Tc INJ FLOW - 1500 gpm

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 3(C)

Align the first HHSI pump for Hot Leg Recirculation.

Standard:

- * *Energizes selected SI train HHSI hot leg injection valve by momentarily placing the PWR LOCKOUT switch to POWER ON. MOV-0008A(B)*
- * *Opens HHSI hot leg injection valve. MOV-0008A(B)*
- * *Closes HHSI cold leg injection valve. MOV-0006A(B)*
- Verifies hot leg injection flow on FI-0917 (A Train) or FI-0918 (B Train).*
- De-energizes selected SI train HHSI hot leg injection valve by momentarily placing the PWR LOCKOUT switch to POWER OFF. MOV-0008A(B)*

Comment:

1. Applicant may start with either A or B train.
2. Items marked with an “*” are the critical steps.

Cue:

Energize MOV-0008A(B): PWR LOCKOUT: Initially - Green Light LIT, Finally - Red Light LIT

VPI: Initially and Finally - Green Light LIT

INJ: Initially - both lights NOT LIT, Finally - Green light LIT

Open MOV-0008A(B): VPI and INJ: Initially - Green Light LIT, Finally - Red Light LIT

Close MOV-0006A(B): Initially - Red Light LIT, Finally - Green Light LIT

Verify Flow: 1500 gpm

Deenergize MOV-0008A(B): PWR LOCKOUT: Initially - Red Light LIT, Finally - Green Light LIT

VPI: Initially and Finally - Red Light LIT

INJ: Initially - Red light LIT, Finally - Both lights NOT LIT

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4(C)

Align the first LHSI pump for Hot Leg Recirculation.

Standard:

- * *Dispatches an operator locally close the LHSI cold leg injection valve breaker. MOV-0031A(B)*
- * *Energizes selected SI train LHSI hot leg injection valve by momentarily placing the PWR LOCKOUT switch to POWER ON. MOV-0019A(B)*
- * *Opens LHSI hot leg injection valve. MOV-0019A(B)*
- * *Closes LHSI cold leg injection valve. MOV-0031A(B)*
- Verifies hot leg injection flow on FI-0927 (A Train) or FI-0928 (B Train).*
- De-energizes selected SI train LHSI hot leg injection valve by momentarily placing the PWR LOCKOUT switch to POWER OFF. MOV-0019A(B)*

Comment:

1. Applicant may start with either A or B train.
2. Items marked with an “*” are the critical steps.

Cue:

Close Breaker (MOV-0031): Initially - Both Lights NOT LIT, Finally - Red Light LIT

Energize MOV-0019A(B): PWR LOCKOUT: Initially - Green Light LIT, Finally - Red Light LIT

VPI: Initially and Finally - Green Light LIT

INJ: Initially - Both Lights NOT LIT, Finally - Green Light LIT

Open MOV-0019A(B): VPI and INJ: Initially - Green Light LIT, Finally - Red Light LIT

Close MOV-0031A(B): Initially - Red Light LIT, Finally - Green Light LIT

Verify Flow: 2900 gpm

Deenergize MOV-0019A(B): PWR LOCKOUT: Initially - Red Light LIT, Finally - Green Light LIT

VPI: Initially and Finally - Red Light LIT

INJ: Initially - Red Light LIT, Finally - Both Lights NOT LIT

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 5(C)

Align the second HHSI pump for Hot Leg Recirculation.

Standard:

- * *Energizes selected SI train HHSI hot leg injection valve by momentarily placing the PWR LOCKOUT switch to POWER ON. MOV-0008A(B)*
- * *Opens HHSI hot leg injection valve. MOV-0008A(B)*
- * *Closes HHSI cold leg injection valve. MOV-0006A(B)*
- Verifies hot leg injection flow on FI-0917 (A Train) or FI-0918 (B Train).*
- De-energizes selected SI train HHSI hot leg injection valve by momentarily placing the PWR LOCKOUT switch to POWER OFF. MOV-0008A(B)*

Comment:

1. Applicant may start with either A or B train.
2. Items marked with an “*” are the critical steps.

Cue:

Energize MOV-0008A(B): PWR LOCKOUT: Initially - Green Light LIT, Finally - Red Light LIT

VPI: Initially and Finally - Green Light LIT

INJ: Initially - Both lights NOT LIT, Finally - Green light LIT

Open MOV-0008A(B): VPI and INJ: Initially - Green Light LIT, Finally - Red Light LIT

Close MOV-0006A(B): Initially - Red Light LIT, Finally - Green Light LIT

Verify Flow: 1500 gpm

Deenergize MOV-0008A(B): PWR LOCKOUT: Initially - Red Light LIT, Finally - Green Light LIT

VPI: Initially and Finally - Red Light LIT

INJ: Initially - Red light LIT, Finally - Both lights NOT LIT

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 6(C)

Align the second LHSI pump for Hot Leg Recirculation. (Procedure step 3.b)

Standard:

- * *Dispatches an operator locally close the LHSI cold leg injection valve breaker. MOV-0031A(B)*
- * *Energizes selected SI train LHSI hot leg injection valve by momentarily placing the PWR LOCKOUT switch to POWER ON. MOV-0019A(B)*
- * *Opens LHSI hot leg injection valve. MOV-0019A(B)*
- * *Closes LHSI cold leg injection valve. MOV-0031A(B)*
- Verifies hot leg injection flow on FI-0927 (A Train) or FI-0928 (B Train).*
- De-energizes selected SI train LHSI hot leg injection valve by momentarily placing the PWR LOCKOUT switch to POWER OFF. MOV-0019A(B)*

Comment:

1. Applicant may start with either A or B train.
2. Items marked with an “*” are the critical steps.

Cue:

Close Breaker (MOV-0031): Initially - Both Lights NOT LIT, Finally - Red Light LIT

Energize MOV-0019A(B): PWR LOCKOUT: Initially - Green Light LIT, Finally - Red Light LIT

VPI: Initially and Finally - Green Light LIT

INJ: Initially - Both Lights NOT LIT, Finally - Green Light LIT

Open MOV-0019A(B): VPI and INJ: Initially - Green Light LIT, Finally - Red Light LIT

Close MOV-0031A(B): Initially - Red Light LIT, Finally - Green Light LIT

Verify Flow: 2900 gpm

Deenergize MOV-0019A(B): PWR LOCKOUT: Initially - Red Light LIT, Finally - Green Light LIT

VPI: Initially and Finally - Red Light LIT

INJ: Initially - Red Light LIT, Finally - Both Lights NOT LIT

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 7

Dispatch an Operator to open and lock the breakers for the following valves:

1. LHSI Pump 1A Disch to Loop 1 Cold Leg 1-SI-MOV-0031A
2. LHSI Pump 1B Disch to Loop 2 Cold Leg 1-SI-MOV-0031B
3. LHSI Pump 1C Disch to Loop 3 Cold Leg 1-SI-MOV-0031C

Standard:

A Plant Operator is dispatched to open and lock the breakers for the following valves:

- *LHSI Pump 1A Disch to Loop 1 Cold Leg 1-SI-MOV-0031A*
- *LHSI Pump 1B Disch to Loop 2 Cold Leg 1-SI-MOV-0031B*
- *LHSI Pump 1C Disch to Loop 3 Cold Leg 1-SI-MOV-0031C*

Comment:

Cue:

As Plant Operator, acknowledge the request to open and lock the above breakers.

Notes:

- TERMINATE THE JPM -

Stop time _____

VERIFICATION OF COMPLETION

Job Performance Measure: C1, TRANSFER TO HOT LEG RECIRCULATION

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: Sat/Unsat

Evaluator: _____

Signature: _____

Date: _____

JPM - STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A large break LOCA occurred 5.5 hours ago. The control room operators have completed 0POP05-EO-EO10 and are evaluating long term plant status.

Adverse Containment Conditions exist.

INITIATING CUE:

The Unit Supervisor directs you to transfer to hot leg recirculation on SI trains A and B in accordance with 0POP05-EO-ES14, Transfer to Hot Leg Recirculation.

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: PLACE H2 RECOMBINER IN SERVICE

JPM NO.: C2

REVISION: 1

LOCATION: UNIT 1 OR UNIT 2 CONTROL ROOM OR THE SIMULATOR

**JOB PERFORMANCE MEASURE WORKSHEET
SOUTH TEXAS PROJECT**

JPM Title: PLACE H2 RECOMBINER IN SERVICE

JPM No.: C2

Rev. No: 1

STP Task: 91591, Knowledge of H2 control following a LOCA
91590, Knowledge of the controls/indications in the Control Room

STP Objective: 91591, Describe H2 control following a LOCA
91590, Describe the controls/indications in the Control Room

**Related
K/A Reference:** 028 A2.02, Malfunctions or operations on the HRPS; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations: LOCA condition and related concern over hydrogen (RO 3.5, SRO 3.9)

References: OPOP02-CG-0001, Rev. 5, Electric Hydrogen Recombiners

**Task Normally
Completed By:** RO

**Method of
Testing:** Static Performance

**Location of
Testing:** Unit 1 or Unit 2 Control Room or the Simulator

**Time
Critical Task:** No

**Alternate
Path JPM:** No

Validation Time: 20 minutes

Required Materials (Tools/Equipment): Procedure copy if being used in the plant. None needed if being done in the simulator.

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A Large Break LOCA has occurred inside Containment. A Reactor trip and Safety Injection have been actuated. The crew has progressed through the EOP's beginning with 0POP05-EO-EO00, Reactor Trip or Safety Injection, and are currently in 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant, Step 12, Monitor Containment H2 concentration. The H2 Analyzers have been placed in service and Containment H2 concentration is reading 1.5%.

INITIATING CUE:

The Unit Supervisor directs you to place Train 'A' Hydrogen Recombiner in service per 0POP02-CG-0001, Electric Hydrogen Recombiners. Prerequisites have been verified.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Train 'A' Hydrogen Recombiner has been placed in service with the correct power setting

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

Working copy of 0POP02-CG-0001, Electric Hydrogen Recombiners, if this JPM is being performed in the plant.

NOTES:

This JPM to be performed statically in either Unit 1 or 2 Control Room or the Simulator

SIMULATOR SETUP (if performed in the simulator):

- 1) Ensure Radio volume for both stations are set to a reasonable level.
- 2) Ensure the simulator PA buttons on the communications consoles are taped to help eliminate usage.
- 3) Reset to the 100% power Storepoint and verify:
 - Step counter position annunciator light is out
 - Red light at the end of CP-010 is out
 - ICS annunciators have stopped counting up
- 4) Check and clean the following procedures in the simulator(JPM specific):
 - 0POP02-CG-0001, Electric Hydrogen Recombiners
- 5) Place simulator in run, clear/reset any alarms, then GO TO FREEZE
- 6) Ensure the RED alarms lights on the H2 Recombiner Temperature indicators are out (have been reset). (This applies to the Simulator Only.)

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

SAT/UNSAT Performance Step: 1 **Start time:** _____

Obtain a copy of 0POP02-CG-0001, Electric Hydrogen Recombiners

Standard:

Obtains a copy of 0POP02-CG-0001, Electric Hydrogen Recombiners

Comment:

A procedural handout is provided if this JPM is being done in the plant. If this JPM is being performed in the Simulator, the candidate will use procedures located there.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

The applicant reviews the Notes and Precautions section of 0POP02-CG-0001, Electric Hydrogen Recombiners.

Standard:

The applicant reviews the Notes and Precautions section of the procedure and goes to “Section 5.0, Post-LOCA Recombiner Start-up.”

Comment:

Cue:

If asked, the PWR AVAIL light is LIT for both recombiners.

Notes:

SAT/UNSAT Performance Step: 3

Verify that Recombiners 1A(2A) potentiometer labeled PWR ADJ is set at zero (000).

Standard:

Verifies Recombiner 1A(2A) PWR ADJ potentiometers is set at zero (000).

Comment:

1A is Unit 1 Train ‘A’ Recombiner and 2A is Unit 2 Train ‘A’ Recombiner

Cue:

Potentiometers read - zero (000)

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4

Select which H₂ Recombiner is to be placed in service.

Standard:

Selects H₂ RECOMBINER 1A(2A) to be placed in service.

Comment:

Cue:

Unit Supervisor directs you to place "A" Train in service.

Notes:

SAT/UNSAT Performance Step: 5

Verify WHITE lamp labeled PWR AVAIL is LIT.

Standard:

Verifies 1A(2A) H₂ RECOMBINER white PWR AVAIL lamp is LIT.

Comment:

Cue:

White PWR AVAIL lamp - LIT.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 6(C)

Turn the switch labeled PWR to the ON position

Standard:

Turns the PWR switch to ON position for 1A(2A) H₂ RECOMBINER

Comment:

Cue:

Initial: PWR switch for Recombiner 1A(2A) in OFF

Final: PWR switch for Recombiner 1A(2A) in ON

If asked, the red PWR lamp is LIT after the switch is in ON

Notes:

SAT/UNSAT Performance Step: 7

Verify that the red PWR indicator lamp is lit.

Standard:

Verifies the red PWR indicator lamp is lit for 1A(2A) H₂ RECOMBINER

Comment:

Cue:

Initial: Red PWR lamp - NOT LIT

Final: Red PWR lamp - LIT

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 8

Determine Containment pressure prior to and after the LOCA from Chart Recorder.

Standard:

Determines and records containment pressure prior to LOCA and after LOCA by using either:

- *CONTAINMENT PRESS 1(2)-HC-PR-0934 (CP018)*

-OR-

- *WR PRESS 1(2)-HC-PR-9759 (CP018)*

Comment:

It will be difficult for the examiner to indicate values on the electronic recorders due their variation in scaling. All electronic recorders have digital readouts in addition to the history traces. Recommend the examiners provide these values rather than trying to point to the corresponding value on the chart portion of the recorder.

Cue:

Prior to LOCA - 0.0 psig.

POST LOCA - 8.0 psig.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 9

Determine pre-LOCA Containment temperature from one of the RCFC inlet temperatures recorded on the Operator Logs for a RCFC in operation prior to the LOCA.

Standard:

Records containment temperature prior to LOCA using RCFC Inlet Temperature from Plant Operating Logs.

Comment:

There are no operator logs in the Simulator so for consistency sake, examiners (Unit 1, Unit 2, Simulator) should provide the temperature data at this step without waiting for the student to locate logs.

Cue:

Plant Operating Logs, last RCFC Inlet Temperature: 90°F

Notes:

SAT/UNSAT Performance Step: 10

Determine Pressure Factor (C_p) from Recombiner Power Correction Factor versus Containment Pressure Curve.

Standard:

Determines and records Pressure Factor C_p from ADDENDUM 1 to be 1.40 (1.37-1.43)

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 11

Calculate required power setting for the desired Recombiner by multiplying the Pressure Factor (C_p) times the Reference Power.

Standard:

Calculates and records power setting for 1A(2A) Hydrogen Recombiner:

Unit 1 = 71.4 (69.87-72.93) KW Unit 2 = 60.9 (59.6-62.2) KW

Comment:

Unit 1 value based on 1.4 x 51 KW, Unit 2 value based on 1.4 x 43.5 KW

Cue:

Notes:

SAT/UNSAT Performance Step: 12

Select one of the three thermocouple positions on the TEMP SEL SWITCH for the Hydrogen Recombiner being placed in service:

Standard:

Selects any thermocouple position on the TEMP SEL SWITCH for Hydrogen Recombiner 1A(2A) except OFF.

Comment:

Cue:

The TEMP SEL SWITCH indicated by the student is in the position specified by his/her action

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 13(C)

Adjust the power adjust potentiometer for the selected Hydrogen Recombiner

Standard:

Adjusts 1A(2A) H₂ Recombiner PWR ADJ potentiometer as follows:

- 1) *Slowly turns clockwise until 5 KW is obtained on PWR meter, then waits 10 minutes.*
- 2) *Slowly turns clockwise until 10 KW is obtained on PWR meter, then waits 10 minutes.*
- 3) *Turns clockwise until 20 KW is obtained on PWR meter, then waits 5 minutes.*
- 4) *Turns clockwise until the following is obtained on PWR meter:*
 - *Unit 1 = 71.4 (69.87-72.93) KW*

-OR-

- *Unit 2 = 60.9 (59.6-62.2) KW*

Comment:

To expedite performance of this JPM, note time cues provided.

Cue:

- 1) PWR meter rises slowly to 5 KW and stabilizing out.
10 minutes have elapsed.
- 2) PWR meter rises slowly to 10 KW and stabilizing out.
10 minutes have elapsed.
- 3) PWR meter rises to 20 KW and stabilizing out.
5 minutes have elapsed.
- 4) PWR meter rises to value selected and stabilizes out.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 14

Plot Recombiner temperature on Data Sheet 1

Standard:

References Data Sheet 1 and goes to next step to obtain initial temperature reading

Comment:

The procedure Notes and Precautions states that “**Fine adjustment of the temperature meter should be obtained by rotating the meter dial until the red needle is at the twelve o’clock position.**” The student may discuss performing this action, but it is not a requirement in order to obtain temperature readings.

Cue:

If asked about rotating the meter face to obtain a reading, as the Unit Supervisor indicate that you do not have a preference (see comment above)

If asked for a current temperature reading, using a pointing device, indicate a temperature on the large temperature indicator dial of ~400-500°F and rising slowly.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 15

When temperature reaches a steady-state value, then adjust potentiometer as required to maintain an average thermocouple reading between 1225 – 1450°F

Standard:

Determines thermocouple temperature is within 1225 – 1450°F range. Records information on Data Sheet 1.

Comment:

Cue:

Indicate that 2 hours have elapsed and using a pointing device, indicate a temperature on the large temperature indicator dial within the range prescribed above.

Notes:

- TERMINATE THE JPM -

Stop time _____

VERIFICATION OF COMPLETION

Job Performance Measure: C2, PLACE H2 RECOMBINER IN SERVICE

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature: _____

Date: _____

JPM – STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A Large Break LOCA has occurred inside Containment. A Reactor trip and Safety Injection have been actuated. The crew has progressed through the EOP's beginning with OPOP05-EO-EO00, Reactor Trip or Safety Injection, and are currently in OPOP05-EO-EO10, Loss of Reactor or Secondary Coolant, Step 12, Monitor Containment H2 concentration. The H2 Analyzers have been placed in service and Containment H2 concentration is reading 1.5%.

INITIATING CUE:

The Unit Supervisor directs you to place Train 'A' Hydrogen Recombiner in service per OPOP02-CG-0001, Electric Hydrogen Recombiners. Prerequisites have been verified.

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: RESPOND TO CCW LEAK

JPM NO.: S1

REVISION: 1

LOCATION: SIMULATOR

JOB PERFORMANCE MEASURE WORKSHEET
SOUTH TEXAS PROJECT

JPM Title: RESPOND TO CCW LEAK

JPM No.: S1

Rev. No: 1

STP Task: 85250 - Respond to a loss of Component Cooling Water.

STP Objective: 85250 - Respond to a loss of Component Cooling Water per POP04-CC-0001.

Related K/A: 008 A1.04 [3.1/3.2] Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CCWS controls including: Surge tank level.

References: 0POP04-CC-0001, Rev. 14, Component Cooling Water System Leak
0POP02-CC-0001, Rev. 30, Component Cooling Water
0POP09-AN-02M3, Rev 19, Lampbox 2M03 Response Instructions

Task Normally Completed By: RO

Method of Testing: Actual Performance

Location of Testing: Simulator

Time Critical Task: NO

Alternate Path JPM: YES

Validation Time: 20 minutes

Required Materials (Tools/Equipment):
None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A plant startup is in progress with reactor power at ~16% and the crew is preparing for an upcoming 'A' Train outage.

INITIATING CUE:

The Unit Supervisor directs you to start CCW Pump 1C and secure CCW Pump 1A in accordance with 0POP02-CC-0001, Component Cooling Water.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

CCW Surge Tank first low level isolation valves are closed and charging and letdown are secured.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

None, the applicant is expected to use the simulator copy of the procedures.

NOTES:

- 1) This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance. NO indication type cues are provided.

SIMULATOR SETUP:

1. JPMs S1 and S2 are to run together. The following steps will set up the simulator for **BOTH** JPMs.
2. Ensure Radio volume for both stations are set to a reasonable level.
3. Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
4. Reset to IC #143 and verify:
 - Step counter position annunciator light is out
 - Red light at the end of CP-010 is out
 - ICS annunciators have stopped counting up
5. Check and clean the following procedures:
 - 0POP03-ZG-0005, Plant Startup to 100%
 - 0POP02-CC-0001, Component Cooling Water
 - 0POP04-CC-0001, Component Cooling Water System Leak
 - 0POP09-AN-02M3, Lampbox 2M03 Response Instructions (Window F-6)
6. Place simulator in run when the examiners are ready to proceed.
7. There is no simulator lesson for either of these JPMs

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

SAT/UNSAT Performance Step: 1 **Start time:** _____

Obtain the procedure.

Standard:

Obtains a copy of 0POP02-CC-0001, Component Cooling Water

Comment:

The applicant should use the simulator copy of 0POP03-ZG-0005, Plant Startup to 100%.

Cue:

Notes:

SAT/UNSAT Performance Step: 2

The applicant reviews the Notes and Precautions section of 0POP02-CC-0001, Component Cooling Water.

Standard:

The applicant reviews the Notes and Precautions section of the procedure and goes to Section 10.0, Starting a CCW Train.

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 3

Ensure CCW train to be started has been filled and vented.

Standard:

Verifies that CCW Train 'C' has been filled and vented

Comment:

Surge tank level may also be used as an additional indication of system status.

Cue:

If asked, as Unit Supervisor, inform the operator that Component Cooling Water Train 'C' is filled and vented.

Notes:

SAT/UNSAT Performance Step: 4

Ensure only one RAD MONITOR valve for RT-8040 is open from a running CCW train.

Standard:

Verifies that only FV-4524 from train 'A' is open.

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 5

Ensure CCW Pump Supplementary Cooler control switch in AUTO for CCW pump to be started.

Standard:

Verifies PUMP 1C / RM 067F SUPP CLR 11C HM-VAH003 control switch in AUTO.

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 6

Ensure ECW pump running that is associated with CCW pump to be started.

Standard:

Verifies ECW pump 1C running.

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 7

Ensure CCW/ECW mode selector switches for all trains in OFF.

Standard:

Places train A and C mode selector switches in OFF and verifies train B mode selector switch is in OFF.

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 8

Start desired COMP CLG WTR PUMP.

Standard:

Starts CCW pump 1C.

Comment:

The leak develops when CCW pump 1C is started. The first thing the operator may notice is the makeup valve opening. A short time later the surge tank level low alarm will come in.

Cue:

- If operator does not respond to the surge tank low level alarm, then as Unit Supervisor, direct the operator to respond to annunciators received as required by the annunciator response procedures.
- If the operator recognizes entry criteria for 0POP04-CC-0001 prior to direction from the annunciator response procedure, as Unit Supervisor, direct the operator to perform the actions of 0POP04-CC-0001 (these actions start at JPM step 15).

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 9

Ensure the following valves OPEN:

- CCW SPLY HDR ISOL MOV-0132
- CCW RET HDR ISOL MOV-0192
- SUPPLY ISOL MOV-0771
- RET ISOL MOV-0775

Standard:

Verifies the following valves are open:

___ *CCW SPLY HDR ISOL MOV-0132*

___ *CCW RET HDR ISOL MOV-0192*

___ *SUPPLY ISOL MOC-0771*

___ *RET ISOL MOV-0775*

Comment:

Due to timing with the leak, this step may not be performed before the operator goes to the annunciator response procedure.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 10

Verify CCW Surge Tank level.

Standard:

Checks all 3 control board level indicators and verifies they all read about the same level.

Comment:

This is the first step in the annunciator response for CCW SURGE TK LVL LO.

Cue:

Notes:

SAT/UNSAT Performance Step: 11

Ensure LV-4501 Normal Demineralized Water Makeup Valve open

Standard:

Verifies that LV-4501, M/U, is open

Comment:

The valve should be open with level less than 68.75%

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 12

Dispatch an Operator to investigate the cause of the alarm.

Standard:

Contacts a Plant Operator and sends them to the Mechanical Auxiliary Building to look for Component Cooling Water leakage.

Comment:

Cue:

As a Plant Operator, acknowledge the request and state that you are enroute to look for Component Cooling Water leakage.

Notes:

SAT/UNSAT Performance Step: 13

If CCW Surge Tank level is not restored by normal makeup, then perform the following:

- Ensure a RMW Pump is running
- Dispatch an operator to open CC-0231, RMWST TO CCW SURGE TANK

Standard:

Verifies a RMW Pump is running and contacts a Plant Operator to locally open CC-0231, RMWST TO CCW SURGE TANK.

Comment:

Cue:

As a Plant Operator, acknowledge the request and state that you enroute to CC-0231.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 14

If CCW Surge Tank level continues to decrease, then go to 0POP04-CC-0001, Loss of Component Cooling Water.

Standard:

Notifies the Unit Supervisor that the annunciator response procedure directs entry into 0POP04-CC-0001.

Comment:

Cue:

- As the Unit Supervisor, acknowledge the notification and direct the operator to perform the actions of 0POP04-CC-0001.
- If level is already stable at 63%, then as the Unit Supervisor, direct the operator to perform the actions of 0POP04-CC-0001.

Notes:

SAT/UNSAT Performance Step: 15

Check Normal Demineralized Water Makeup Valve LV-4501 OPEN.

Standard:

Verifies LV-4501, M/U, OPEN

Comment:

This is the first action of 0POP04-CC-0001.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 16

Monitor for CCW Surge Tank Low Level NON-Vital Supply Valves Isolation:

- CCW Surge Tank Level - Less than 64.6%
- OR
- CCW Surge Tank Level - Has been less than 64.6%

Standard:

Verifies CCW Surge Tank level is less than 64.6%.

Comment:

If level is not below 64.6% at this time, it will eventually fall below this level.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 17 (C)

Check closed the following valves:

- MOV-0235, NNS LOADS INL ISOL
- MOV-0236, NNS LOADS INL ISOL
- MOV-0297, BRANCH ISOL
- MOV-0392, RCDT HX 1A INL
- MOV-0393, EXCESS LETDOWN HX 1A INL

Standard:

Closes the following valves:

___ *MOV-0235, NNS LOADS INL ISOL*

___ *MOV-0236, NNS LOADS INL ISOL*

___ *MOV-0297, BRANCH ISOL*

___ *MOV-0392, RCDT HX 1A INL*

___ *MOV-0393, EXCESS LETDOWN HX 1A INL*

Comment:

These valves fail to automatically close on low level.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 18 (C)*

Isolate charging and letdown.

Standard:

1) Closes the following valves:

___ * *FV-0011, LETDN ORIF HDR ISOL VLV*

___ *FV-0012, 120 GPM ORIF ISOL VLV*

___ * *LCV-0465, LETDN ISOL*

___ * *LCV-0468, LETDN ISOL*

2) ___ * *Places FK-0205, CHG FLOW CONT, in MAN and CLOSED*

3) ___ *Adjusts HCV-0218, FLOW CONT, to maintain seal injection between 6 and 13 gpm*

Comment:

- * - Denotes critical portion of the step
- In step 1 above, only one of the three valves must be closed to satisfy the critical portion of the step.

Cue:

Notes:

- TERMINATE THE JPM -

Stop time: _____

VERIFICATION OF COMPLETION

Job Performance Measure: S1, RESPOND TO CCW LEAK

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature: _____

Date: _____

JPM – STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A plant startup is in progress with reactor power at ~16% and the crew is preparing for an upcoming 'A' Train outage.

INITIATING CUE:

The Unit Supervisor directs you to start CCW Pump 1C and secure CCW Pump 1A in accordance with 0POP02-CC-0001, Component Cooling Water.

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: TRANSFER MFW CONTROL TO MFW REGULATING VALVES

JPM NO.: S2

REVISION: 1

LOCATION: SIMULATOR

JOB PERFORMANCE MEASURE WORKSHEET
SOUTH TEXAS PROJECT

JPM Title: TRANSFER MFW CONTROL TO MFW REGULATING VALVES

JPM No.: S2

Rev. No: 1

STP Task: 21050 - Place the Main Feedwater Regulating Valves in auto.

STP Objective: 21050 - Place the Main Feedwater Regulating Valves in auto in accordance with POP03-ZG-0005

**Related
K/A Reference:** 059 A4.08 [3.0/2.9] Ability to manually operate and monitor in the control room: Feed regulating valve controller.

References: 0POP03-ZG-0005, Rev. 53, Plant Startup to 100%

**Task Normally
Completed By:** RO

**Method
of Testing:** Actual Performance

**Location
of Testing:** Simulator

**Time
Critical Task:** NO

**Alternate
Path JPM:** NO

**Validation
Time:** 15 minutes

Required Materials (Tools/Equipment):

None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A plant startup is in progress per 0POP03-ZG-0005, Plant Startup to 100%. The turbine is on the grid and the startup feedwater pump is in service.

INITIATING CUE:

The Unit Supervisor directs you to transfer steam generator water level control **from the low power feedwater regulating valve to the main feedwater regulating valve** for 'A' and 'D' Steam Generators in accordance with Addendum 11 of 0POP03-ZG-0005, Plant Startup to 100%.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Steam Generators 'A' and 'D' water level control has been transferred to the main feedwater regulating valve in accordance with 0POP03-ZG-0005, Plant Startup to 100%.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

None, the applicant is expected to use the simulator copy of the procedure.

NOTES:

- 1) This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance. NO indication type cues are provided.

SIMULATOR SETUP:

- 1) JPMs S1 and S2 are to run together. The following steps will set up the simulator for **BOTH** JPMs.
- 2) Ensure Radio volume for both stations are set to a reasonable level.
- 3) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
- 4) Reset to IC #143 and verify:
 - Step counter position annunciator light is out
 - Red light at the end of CP-010 is out
 - ICS annunciators have stopped counting up
- 5) Check and clean the following procedures:
 - 0POP03-ZG-0005, Plant Startup to 100%
 - 0POP02-CC-0001, Component Cooling Water
 - 0POP04-CC-0001, Component Cooling Water System Leak
 - 0POP09-AN-02M3, Lampbox 2M03 Response Instructions (Window F-6)
- 6) Place simulator in run when the examiners are ready to proceed.
- 7) There is no simulator lesson for either of these JPMs

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

SAT/UNSAT Performance Step: 1 **Start time:** _____

Obtain the procedure.

Standard:

Obtains a copy of OPOP03-ZG-0005, Plant Startup to 100%.

Comment:

The applicant should use the simulator copy of OPOP03-ZG-0005, Plant Startup to 100%.

Cue:

Notes:

SAT/UNSAT Performance Step: 2

Ensure a pre-job briefing performed IAW Conduct of Operations Chapter 2.

Standard:

Verifies that a pre-job briefing has been conducted.

Comment:

Cue:

As the Unit Supervisor, give the following briefing points to the applicant:

- Closely monitor steam generator levels during the transfer
- Perform the transfer on one steam generator at a time
- Immediate inform me of any problems encountered

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 3

Ensure the SG being transferred, narrow range level is stable between 65% and 75%.

Standard:

Verifies that SG 1A or 1D narrow range level indications are stable between 65% and 75%.

Comment:

The applicant may transfer either steam generator first

Cue:

Notes:

SAT/UNSAT Performance Step: 4

ENSURE SG main feedwater regulating valve is in manual and fully closed.

Standard:

Verifies that SG 1A "NORM FCV-0551" or SG 1D "NORM FCV-0554", Main Feed Regulating valve is in manual and closed.

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 5 (C)

Ensure the main feedwater regulating valve isolation valve is open for the SG being transferred.

Standard:

Dispatches a Plant Operator to open 1-FW-0068, SG 1A Feedwater Reg. Valve Isolation Valve or 1-FW-0109, SG 1D Feedwater Reg. Valve Isolation Valve.

Comment:

The manual isolation valves are already open.

Cue:

Plant Operator Reports that 1-FW-0068 is open. If the applicant has the operator verify both valves are open, then report that 1-FW-0109 is open also.

Notes:

SAT/UNSAT Performance Step: 6

Place low power feedwater regulating valve in manual and NOTE SG feedwater flow.

Standard:

- 1) Depresses MANUAL pushbutton on SG 1A "LOW PWR FV-7151" or SG 1D "LOW PWR FV-7154" controller.*
- 2) Notes SG 1A or 1D Flowrate by recording or marking flow.*

Comment:

Recording flows is optional. Other methods such as grease mark on the control board flow instrument may be used (as approved by the Shift/Unit Supervisor).

Flowrate should be approximately .55 - .65 (M lbm/hr)

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 7 (C)

Begin transfer from low power to main feedwater regulating valves.

Standard:

Maintains SG 1A or 1D Feedwater flowrate approximately constant while transferring control as follows:

___ *Throttles OPEN "NORM FCV-0551" or "NORM FCV-0554" until feed flow increase is noticed.*

___ *Throttles CLOSED "LOW PWR FV-7151" or "LOW PWR FV-7154" until feed flow returns to initial value.*

___ *Repeats these steps until "LOW PWR FV-7151" or "LOW PWR FV-7154" is approximately 8% to 10% open.*

Comment:

Cue:

If permission is requested to use 2 handed operations, as the Unit Supervisor, give permission to use 2 handed operation.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 8 (C)

Complete transfer from low power to main feedwater regulating valves.

Standard:

___ *Places "NORM FCV-0551" or "NORM FCV-0554" in AUTO*

___ *Slowly CLOSES "LOW PWR FV-7151" or "LOW PWR FV-7154", ensuring SG Narrow Range Level is within the normal control band (65%-75%).*

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 9

Begins transfer of the second SG by ensuring the SG being transferred, narrow range level is stable between 65% and 75%.

Standard:

Verifies that SG 1A or 1D narrow range level indications are stable between 65% and 75%.

Comment:

The applicant may be transferring either steam generator.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 10

ENSURE SG main feedwater regulating valve is in manual and fully closed.

Standard:

Verifies that SG 1A "NORM FCV-0551" or SG 1D "NORM FCV-0554", Main Feed Regulating valve is in manual and closed.

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 11 (C)

Ensure the main feedwater regulating valve isolation valve is open for the SG being transferred.

Standard:

Dispatches a Plant Operator to open 1-FW-0068, SG 1A Feedwater Reg. Valve Isolation Valve or 1-FW-0109, SG 1D Feedwater Reg. Valve Isolation Valve.

Comment:

The manual isolation valves are already open.

The applicant may have earlier verified both valves open.

Cue:

Plant Operator Reports that 1-FW-0068 or 1-FW-0109 is open (whichever was requested).

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 12

Place low power feedwater regulating valve in manual and NOTE SG feedwater flow.

Standard:

- 3) *Depresses MANUAL pushbutton on SG 1A "LOW PWR FV-7151" or SG 1D "LOW PWR FV-7154" controller.*
- 4) *Notes SG 1A or 1D Flowrate by recording or marking flow.*

Comment:

Recording flows is optional. Other methods such as grease mark on the control board flow instrument may be used (as approved by the Shift/Unit Supervisor).

Flowrate should be approximately .55 - .65 (M lbm/hr)

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 13 (C)

Begin transfer from low power to main feedwater regulating valves.

Standard:

Maintains SG 1A or 1D Feedwater flowrate approximately constant while transferring control as follows:

___ *Throttles OPEN "NORM FCV-0551" or "NORM FCV-0554" until feed flow increase is noticed.*

___ *Throttles CLOSED "LOW PWR FV-7151" or "LOW PWR FV-7154" until feed flow returns to initial value.*

___ *Repeats these steps until "LOW PWR FV-7151" or "LOW PWR FV-7154" is approximately 8% to 10% open.*

Comment:

Cue:

If permission is requested to use 2 handed operations, as the Unit Supervisor, give permission to use 2 handed operation.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 14 (C)

Complete transfer from low power to main feedwater regulating valves.

Standard:

___ *Places "NORM FCV-0551" or "NORM FCV-0554" in AUTO*

___ *Slowly CLOSES "LOW PWR FV-7151" or "LOW PWR FV-7154", ensuring SG Narrow Range Level is within the normal control band (65%-75%).*

Comment:

Cue:

Notes:

- TERMINATE THE JPM -

Stop time: _____

VERIFICATION OF COMPLETION

Job Performance Measure: S2, TRANSFER MFW CONTROL TO MFW REGULATING VALVES

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature _____

Date _____

JPM - STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: **Do not operate or alter equipment configuration in the plant without proper authorization.**

INITIAL CONDITIONS:

A plant startup is in progress per 0POP03-ZG-0005, Plant Startup to 100%. The turbine is on the grid and the startup feedwater pump is in service.

INITIATING CUE:

The Unit Supervisor directs you to transfer steam generator water level control **from the low power feedwater regulating valve to the main feedwater regulating valve** for 'A' and 'D' Steam Generators in accordance with Addendum 11 of 0POP03-ZG-0005, Plant Startup to 100%.

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: RESTORE OFFSITE POWER TO ESF BUS

JPM NO.: NRC S3

REVISION: 1

LOCATION: SIMULATOR

JOB PERFORMANCE MEASURE INFORMATION SHEET

JPM Title: RESTORE OFFSITE POWER TO ESF BUS

JPM No.: S3

Rev. No: 1

STP Task: 44650 Transfer an Emergency Bus from the Emergency Diesel Generator to offsite power.

STP Objective: 44650 Transfer an ESF BUS from the Emergency Diesel Generator to offsite power IAW 0POP02-DG-0001/2/3 until the diesel is back in normal standby lineup.

Related K/A Reference:

062 A4.07 [3.1/3.1], Ability to manually operate and/or monitor in the control room: Synchronizing and paralleling of different AC supplies.

064 A3.06 [3.3/3.4], Ability to monitor automatic operation of the ED/G system, including: Start and stop.

064 A4.01 [4.0/4.3], Ability to manually operate and/or monitor in the control room: Local and remote operation of the ED/G.

References: 0POP02-DG-0001, Rev. 42, Emergency Diesel Generator 11(21)

Task Normally Completed By: RO/SRO

Method of Testing: Actual Performance

Location of Testing: Simulator

Time Critical Task: NO

Alternate Path JPM: NO

Validation Time: 20 minutes

Required Materials (Tools/Equipment):

None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A fault occurred on 4.16KV ESF BUS E1A supply breaker E1A/1. Emergency Diesel Generator 11 started and loaded normally. The A ESF BUS supply breaker E1A/1 has been repaired and re-installed.

INITIATING CUE:

The Unit Supervisor directs you to restore normal off-site power (Standby Bus 1F) to 4.16KV ESF Bus 'A' AND place ESF Diesel Generator 11 in a cooldown cycle in accordance with OPOP02-DG-0001, Emergency Diesel Generator 11(21).

- The requirement for having a second operator and the Unit /Shift Supervisor available during the synchronization task has been waived by the Shift Supervisor.
- Per the Shift Supervisor, the time requirements in the unloading rate table of OPOP02-DG-0001 are waived.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

4.16KV ESF bus E1A is being supplied from its associated standby bus. ESF Diesel Generator 11 is in a cooldown cycle.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

None. The student is expected to use the simulator copy of the procedure.

NOTES:

This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance.
(NO Indication type Cues are provided.)

SIMULATOR SETUP:

JPMs S3 and S4 are to be run together. The following steps will set up the simulator for **BOTH** JPMs.

- 1) Ensure Radio volume for both stations are set to a reasonable level.
- 2) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
- 3) Reset to IC # 144 and verify:
 - Step counter position annunciator light is out
 - Red light at the end of CP-010 is out
 - ICS Annunciators have stopped counting up
- 4) Ensure the breaker control sw. target flags agree with breaker position for the following:
 - STBY Bus 1F to E1A Transformer (CP-010)
 - E1A Normal Supply Breaker (CP-003)
 - DG #11 Output Breaker (CP-003)
- 5) Check and clean the following procedures:
 - 0POP02-DG-0001, Emergency Diesel Generator 11(21)
 - 0POP09-AN-04M8, Annunciator Lampbox 4M08 Response Instructions
- 6) Place simulator in run. Silence/acknowledge/reset alarms as appropriate.

ADDITIONAL INSTRUCTIONS ON NEXT PAGE

- 7) Verify the following:
- FV-0011 is CLOSED.
 - FCV-0205 is in MANUAL and CLOSED.
 - CCB 1A is not running. Control room Handswitch is in the PTL Position.
 - PDP Green light is ON
- 8) Place the simulator in 'FREEZE' until the examiners are ready to proceed.
- 9) There is no simulator lesson for either of these JPM's.

INSTRUCTOR ACTIONS:

None for this JPM

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

JPM START TIME _____

SAT/UNSAT Performance Step: 1

Obtain a copy of the applicable Emergency Diesel Generator procedure.

Standard:

The applicant obtains a copy of 0POP02-DG-0001, Emergency Diesel Generator 11(21).

Comment:

The applicant should use the simulator copy of 0POP02-DG-0001, Emergency Diesel Generator 11(21).

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

The applicant reviews the Notes and Precautions section of 0POP02-DG-0001, Emergency Diesel Generator 11(21).

Standard:

The applicant reviews the Notes and Precautions section of the procedure and goes to “Section 9.0, Transferring 4.16 KV Bus E1A (E2A) from Diesel Generator 11(21) to Offsite Supply.”

Comment:

Cue:

Throughout this JPM, **IF** applicant asks the local operator to investigate the cause of a “DG11 TROUBLE” alarm, report alarm is due to “Standpipe Level Off-normal”.

Notes:

SAT/UNSAT Performance Step: 3

VERIFY Diesel Generator 11 is the only source of power to ESF Bus E1A. (0POP02-DG-0001, Emergency Diesel Generator 11(21), Step 9.1)

Standard:

The applicant checks to ensure that Diesel Generator 11 is the only source of power to ESF Bus E1A.

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4

Verify breaker alignment for transfer of power supply from Diesel Generator 11 to Standby Bus 1F. (0POP02-DG-0001, Emergency Diesel Generator 11(21), Step 9.2)

Standard:

The Operator ENSURES each of the following is in the proper position on CP-010:

_____ *"EMER BUS 1L TO XFMR E1A BKR SW-EMER" is OPEN*

_____ *"EMER BUS 1L TO XFMR E1A DISC SW-EMER" is OPEN*

_____ *"STBY BUS 1F TO XFMR E1A DISC SW-NORM" is CLOSED*

_____ *"STBY BUS 1F TO XFMR E1A BKR SW-NORM" is CLOSED*

Comment:

Procedure step 9.3, Transferring ESF DG to Emergency Bus 1L, is N/A.

Cue:

If the operator asks for clarification, tell him that the Unit Supervisor has directed that the bus be energized from STBY Bus 1F (which is energized from UNIT 1 AUX XFMR).

If asked, respond as TGB or Condensate Polishing Watch that no one is in the switchgear room.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 5

ENSURE any activated protective relays reset. (ZLP101) (0POP02-DG-0001, Emergency Diesel Generator 11(21), Step 9.4)

Standard:

The applicant directs a Plant Operator to locally reset any protective relay that may have tripped.

Comment:

Cue:

- As Plant Operator, report no protective relays have tripped.
- If asked, as Plant Operator report that there are no local alarms present.

Notes:

SAT/UNSAT Performance Step: 6

ENSURE the Train 'A' Load Sequencer is reset. (0POP02-DG-0001, Emergency Diesel Generator 11(21), Step 9.5)

Standard:

The operator depresses the white sequencer RESET pushbutton on CP-003 for ESF Diesel Generator 11 OR verifies the Train 'A' Sequencer is reset.

Comment:

- The Load Sequencer will already be reset ("LOOPWR" status lights are clear), thus the student need only verify its status.
- Computer Indication of sequencer reset is on ICS display 9713

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 7

Momentarily DEPRESS the Diesel Generator 11 "RESET" pushbutton to ensure the non-emergency trip logic reset. (CP003) (0POP02-DG-0001, Emergency Diesel Generator 11(21), Step 9.6)

Standard:

The operator depresses the white RESET pushbutton on CP-003 for Diesel Generator 11.

Comment:

Cue:

If asked, the Unit Supervisor reports that No non-emergency trip signal was received while the diesel was running in the Emergency Mode.

If asked, the Unit Supervisor reports that Non-Class 1E 125 VDC control power was not lost while the diesel was operating in the Emergency Mode.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 8

Verify the MASTER TRIP CIRCUIT “RESET” light illuminated. (ZLP102) (0POP02-DG-0001, Emergency Diesel Generator 11(21), Step 9.7)

Standard:

The applicant directs a Plant Operator to verify the MASTER TRIP CIRCUIT RESET light on ZLP102 is illuminated.

Comment:

Cue:

As Plant Operator, report the Master Trip Circuit Reset light is on.

Notes:

SAT/UNSAT Performance Step: 9 (C)

DEPRESS the “RELEASE” from Emergency Mode Operation pushbutton. (CP-003) (0POP03-DG-0001, Emergency Diesel Generator 11(21), Step 9.8)

Standard:

The Operator depresses the white "RELEASE" (from Emergency Mode) pushbutton on CP-003 for ESF Diesel Generator 11.

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 10

Verify the “Emergency Mode” white light is extinguished (ZLP-102). (0POP02-DG-0001, Emergency Diesel Generator 11(21), Step 9.9)

Standard:

The operator directs a Plant Operator to verify the white “Emergency Mode” light on ZLP-102 is extinguished.

Comment:

Cue:

As Plant Operator, report the white “Emergency Mode” light on ZLP-102 is extinguished

Notes:

SAT/UNSAT Performance Step: 11

Ensure the ENGINE START MODE switch is in the IDLE position (ZLP-102) (0POP02-DG-0001, Emergency Diesel Generator 11(21), Step 9.10)

Standard:

The operator directs a Plant Operator to verify the ENGINE START MODE switch on ZLP-102 is in the IDLE position.

Comment:

Cue:

As Plant Operator, report the ENGINE START MODE switch is in the IDLE position.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 12 (C)

ENSURE the GOV MODE SEL switch in the PARALLEL position. (CP003) (0POP02-DG-0001, Emergency Diesel Generator 11(21), Step 9.11)

Standard:

The operator places the GOV MODE SEL switch in the PARALLEL position.

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 13(C)*

Parallel the diesel with off-site power. (0POP02-DG-0001, Emergency Diesel Generator 11(21), Step 9.12 through 9.16)

Standard:

The operator performs ALL of the following for the diesel being shutdown:

- _____ *A. *PLACES the SYNCHROSCOPE for Diesel Generator 11 in the ON position. (CP003)*
- _____ B. *ENSURES the US/SS is present when synchronizing Diesel Generator 11. (Note 1)*
- _____ *C. *ADJUSTS engine speed to cause the synchroscope to move slowly in the SLOW direction using the GOV switch. (CP003)*
- _____ *D. *ADJUSTS DG 11 Output voltage using DG 11 VOLT ADJ until DG 11 output voltage is equal to XFRMR E1A VOLTS*
- _____ E. *MONITORS the DG 11 Voltage Meter for all three phases of voltage.*
- _____ *F. *CLOSES ESF Bus E1A Normal SPLY BKR E1A/1 when the synchroscope is approximately in the 12:05 position. (CP003)*
- _____ G. *PLACES the SYNCHROSCOPE switch in the OFF position. (CP003)*

Comment:

- * - Denotes critical portion of the step
- A second operator is NOT AVAILABLE to read the required steps per the procedure. THE EVALUATOR **WILL NOT** BE THE READER.

Cue:

Note 1 - The requirement for having a second operator and the Unit /Shift Supervisor available during the synchronization task has been waived by the Shift Supervisor.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 14(C)

Unload the diesel. (0POP02-DG-0001, Emergency Diesel Generator 11(21), Step 9.17 through 9.20)

Standard:

The operator performs ALL of the following for the diesel to be shutdown:

- _____ A. *Using the Diesel Generator 11 GOV switch, DECREASES diesel generator load to approximately 100 KW.*
- _____ B. *Using the Diesel Generator 11 VOLT ADJ switch, ADJUST diesel generator voltage to between 4000 V and 4275 V.*
- _____ C. *Opens the Diesel Generator 11 DG OUTP BKR. (CP003)*

Comment:

The procedure recommends actions 'A' and 'B' above be done concurrently while unloading DG 11.

For time compression considerations in the simulator, the recommended Diesel Generator unloading rates of step 4.45 will not be followed. See cue below.

Cue:

As US/SS, inform the applicant that the diesel is to be unloaded within 5 minutes. This consideration will apply to load and voltage rates of change.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 15

ENSURE ENGINE START MODE switch is in the RATED position. (ZLP102) (0POP02-DG-0001, Emergency Diesel Generator 11(21), Step 9.21)

Standard:

The operator directs a Plant Operator to ensure the ESF Diesel Generator 11 ENGINE START MODE switch in the RATED position.

Comment:

Cue:

- As Plant Operator, if asked the as found position of the switch, report that the ENGINE START MODE switch is in the IDLE position.
- As Plant Operator, report the ESF Diesel Generator 11 ENGINE START MODE switch is now in the RATED position

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 16

STOP Diesel Generator 11. (OPOP02-DG-0001, Emergency Diesel Generator 11(21), Step 9.22)

Standard:

_____ *The operator TURNS Diesel Generator 11 NORMAL control switch to the STOP position.
(CP003)*

_____ *WHEN Diesel Generator 11 has entered the cooldown cycle, THEN the operator verifies
that generator voltage decays indicating proper operation of the Generator Exciter Shunt
Relay (K-1) by observing generator voltage decay.*

Comment:

Cue:

Notes:

- TERMINATE THE JPM -

JPM STOP TIME _____

VERIFICATION OF COMPLETION

Job Performance Measure: AUDIT S1, RESTORE OFFSITE POWER TO ESF BUS

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature

Date

JPM – STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A fault occurred on 4.16KV ESF BUS E1A supply breaker E1A/1. Emergency Diesel Generator 11 started and loaded normally. The A ESF BUS supply breaker E1A/1 has been repaired and re-installed.

INITIATING CUE:

The Unit Supervisor directs you to restore normal off-site power (Standby Bus 1F) to 4.16KV ESF Bus 'A' AND place ESF Diesel Generator 11 in a cooldown cycle in accordance with 0POP02-DG-0001, Emergency Diesel Generator 11(21).

- The requirement for having a second operator and the Unit /Shift Supervisor available during the synchronization task has been waived by the Shift Supervisor.
- Per the Shift Supervisor, the time requirements in the unloading rate table of 0POP02-DG-0001 are waived.

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: **RE-ESTABLISH RCP SEAL INJECTION**

JPM NO.: **S4**

REVISION: **1**

LOCATION: **SIMULATOR**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: RE-ESTABLISH RCP SEAL INJECTION

JPM No.: S4

Rev. No: 1

STP Task: T502700, Place the Positive Displacement Charging Pump in service.

STP Objective: CRO 502700, When directed by plant procedure or at Unit Supervisor direction, START the Positive Displacement Charging Pump in accordance with 0POP02-CV-0004, Chemical and Volume Control System Subsystem operating procedure.

**Related
K/A Reference:** 004 A4.11 (3.4, 3.3) Ability to manually operate and/or monitor in the control room: RCP seal injection

References: 0POP09-AN-04M8, Annunciator Lampbox 4M08 Response Instructions, Rev. 28.

**Task Normally
Completed By:** RO

**Method
of Testing:** Actual Performance

**Location
of Testing:** Simulator

**Time
Critical Task:** NO

**Alternate
Path JPM:** YES

**Validation
Time:** 15 minutes

Required Materials (Tools/Equipment):

None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

CCP 1A has tripped due to motor overload and cannot be restarted. CCP 1A control sw. has been placed in PTL. Charging Flow Control Valve, FCV-0205 has been taken to manual and closed. Letdown Orifice Header Isolation Valve, FV-0011 has been closed.

INITIATING CUE:

The Unit Supervisor directs you to re-establish RCP seal injection with 1B Centrifugal Charging Pump in accordance with 0POP09-AN-04M8, Annunciator Lampbox 4M08 Response Instructions, Window F-3 (CHG FLOW HI/LO), beginning at Step 5.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Positive Displacement Charging Pump is started and RCP seal injection for each RCP is established between 8-13 gpm.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

None. The student is expected to use the simulator copy of the procedure.

NOTES:

This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance. (NO Indication type Cues are provided).

SIMULATOR SETUP:

JPMs S3 and S4 are to be run together. The following steps will set up the simulator for **BOTH** JPMs.

- 1) Ensure Radio volume for both stations are set to a reasonable level.
- 2) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
- 3) Reset to IC # 144 and verify:
 - Step counter position annunciator light is out on CP-005
 - Red light at the end of CP-010 is out
 - ICS Annunciators have stopped counting up
- 4) Ensure the breaker control sw. target flags agree with breaker position for the following:
 - STBY Bus 1F to E1A Transformer (CP-010)
 - E1A Normal Supply Breaker (CP-003)
 - DG #11 Output Breaker (CP-003)
- 5) Check and clean the following procedures:
 - 0POP02-DG-0001, Emergency Diesel Generator 11(21)
 - 0POP09-AN-04M8, Annunciator Lampbox 4M08 Response Instructions
- 6) Place simulator in run. Silence/acknowledge/reset alarms as appropriate.

ADDITIONAL INSTRUCTIONS ON NEXT PAGE

JOB PERFORMANCE MEASURE INFORMATION SHEET

7) Verify the following:

- FV-0011 is CLOSED.
- FCV-0205 is in MANUAL and CLOSED.
- CCP 1A is not running. Control Room Handswitch is in the PTL Position.
- PDP Control Room Handswitch is in PTL and Green light is ON for PDP

8) Place the simulator in 'FREEZE' until the examiners are ready to proceed.

9) There is no Simulator Lesson Plan for either of these JPM's.

INSTRUCTOR ACTIONS:

- 1) If contacted as a Plant Operator to check the PDP ready for start, report that it is ready to be started.
- 2) If contacted as a Plant Operator to report pump status after the start, report the start was satisfactory.

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

JPM START TIME_____

SAT/UNSAT Performance Step: 1

Obtains a copy of 0POP09-AN-04M8, Annunciator Lampbox 4M08 Response Instructions

Standard:

Obtains a copy of 0POP09-AN-04M8, Annunciator Lampbox 4M08 Response Instructions

Comment:

The applicant should use the simulator copy of the procedure. No working copy is to be provided by the evaluator.

The Applicant may choose to review applicable Annunciator Response Procedures for alarms caused by this plant condition; however it is intended that he/she perform the indicated section as quickly as possible for time considerations. Provide cues as necessary to ensure this occurs.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Attempts to place 1B Centrifugal Charging Pump in service:

Standard:

- _____ Ensures “CHG FLOW CONT VLV FCV-0205” is CLOSED.
- _____ Ensures 1B Charging Pump Discharge Valve, MOV-8377B, is OPEN.
- _____ Ensures the miniflow, FCV-0202, is OPEN for 1B Charging Pump.
- _____ Verifies the white “L.O. AVAILABLE” light is lit for 1B Charging Pump.
- _____ Starts 1B Charging Pump.
- _____ Determines 1B Charging Pump trips after starting; reports status to Unit Supervisor

Comment:

The student may want to make a Plant announcement prior to starting the CCP. DO NOT allow him/her to actually use the Communications Console (see cue below).

1B Charging Pump will trip after starting. This will require additional steps to be performed to place the Positive Displacement Pump (PDP) in service to supply RCP seals.

RCP 1A has a lower # 1 seal leakoff flow than the other RCP's. Because of this, when a Charging Pump is started, the RCP 1A NO 1 SEAL LKF FLOW HI/LO alarm may annunciate, but should clear as flow stabilizes. (see cue below)

Cue:

If the student attempts to make a Plant announcement, tell him/her that it has been done by another operator.

As the Unit Supervisor, If the RCP 1A NO 1 SEAL LKF FLOW HI/LO alarm comes in, acknowledge the students report and inform him/her to continue with establishing RCP seals.

When the operator reports 1B Charging Pump tripped, as the Unit Supervisor, direct the operator to continue with the procedure (Step 6) to establish RCP seal flow of 8-13 gpm to the RCPs if he/she does not continue on their own.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: **3 (C*)**

Places the Positive Displacement Pump (PDP) in service.

Standard:

_____ Ensures “CHG FLOW CONT VLV FCV-0205” is CLOSED.

_____ Closes “LETDN ORIF HDR ISOL FV-0011” to isolate Letdown.

_____ Ensures CCW is supplying RCP Thermal Barrier Cooling.

_____ Ensures the PDP Recirculation Valve, HCV-0285, is OPEN.

_____ *Starts the PDP

_____ *Slowly closes the PDP Recirculation Valve, HCV-0285, to obtain seal injection flows of 8-13 gpm per RCP.

*** Denotes critical portions of step.**

Comment:

1. The applicant may dispatch a Plant Operator to check the PDP ready for start. Following the start the applicant will expect the Plant Operator to report the start was satisfactory if no problems are noted. Also, the applicant will likely want to make PA announcement before starting the pump (**DO NOT let him/her make an actual announcement**).
2. RCP seal injection flow/pressure may have to be adjusted using a coordination of HCV-0285, Recirc Throttle Valve and Seal Injection Control Valve, HCV-0218.
3. Thermal Barrier CCW cooling flow can be checked by:
 - Absence of THERM BAR CCW FLOW/TEMP TRBL alarms on CP-004 and RCP CCW FLOW LOW alarms on CP-005
 - Valve lineup for CCW to RCP's on panels CP-002 and CP-003

Cue:

1. If the applicant seeks to contact a Plant Operator to check the PDP ready for start, inform him/her that it is ready for start.
2. If the applicant seeks to contact a Plant Operator to check the PDP started OK, inform him/her that it has a good start.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

- TERMINATE THE JPM -

JPM STOP TIME_____

VERIFICATION OF COMPLETION

Job Performance Measure:

Applicant's Name: _____

Date Performed: _____

Time to Complete: _____

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature: _____

Date: _____

JPM STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

CCP 1A has tripped due to motor overload and cannot be restarted. CCP 1A control sw. has been placed in PTL. Charging Flow Control Valve, FCV-0205 has been taken to manual and closed. Letdown Orifice Header Isolation Valve, FV-0011 has been closed.

INITIATING CUE:

The Unit Supervisor directs you to re-establish RCP seal injection with 1B Centrifugal Charging Pump in accordance with 0POP09-AN-04M8, Annunciator Lampbox 4M08 Response Instructions, Window F-3 (CHG FLOW HI/LO), beginning at Step 5.

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: REACTOR MAKEUP SYSTEM FAILURE

JPM NO.: S5

REVISION: 1

LOCATION: SIMULATOR

JOB PERFORMANCE MEASURE WORKSHEET
SOUTH TEXAS PROJECT

JPM Title: REACTOR MAKEUP SYSTEM FAILURE

JPM No.: S5

Rev. No: 1

STP Task: T70200 - Manually makeup to the Volume Control Tank.

STP Objective: CRO 70200 - Manually makeup to the Volume Control Tank in accordance with POP02-CV-0001.

**Related
K/A Reference:** 2.1.20 [4.3/4.2] Ability to execute procedure steps.

References: 0POP02-CV-0001, Rev. 30, Makeup to the Reactor Coolant System

**Task Normally
Completed By:** RO

**Method
of Testing:** Actual Performance

**Location
of Testing:** Simulator

**Time
Critical Task:** NO

**Alternate
Path JPM:** YES

**Validation
Time:** 25 minutes

Required Materials (Tools/Equipment):

Calculator

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

The unit is operating at 73% power. The AUTO M/U REQD alarm on CP-004 has just been received and acknowledged.

INITIATING CUE:

The Unit Supervisor directs you to investigate the alarm and perform any required actions

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Manual makeup to the Volume Control Tank is in progress with Volume Control Tank level rising.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

None, the applicant is expected to use the simulator copy of the procedures.

NOTES:

- 1) This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance. NO indication type cues are provided.

SIMULATOR SETUP:

- 1) JPMs S5 and S6 are to run together. The following steps will set up the simulator for **BOTH** JPMs.
- 2) Ensure Radio volume for both stations are set to a reasonable level.
- 3) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
- 4) Reset to IC #145 and verify:
 - Step counter position annunciator light is out
 - Red light at the end of CP-010 is out
 - ICS annunciators have stopped counting up
- 5) Check and clean the following procedures:
 - OPOP04-RA-0001, Radiation Monitoring System Alarm Response (pages 5, 6, 16-20)
 - OPOP09-AN-4M07, Annunciator Response, window E-8
 - OPOP02-CV-0001, Makeup to the Reactor Coolant System
- 6) Place the simulator in run and perform the following:
 - Set the BA BATCH and TOT M/U BATCH integrators to 10 gallons.
 - SILENCE the RM-11 alarm by depressing the "SYSTEM ACK" button.
 - Select Grid 3 on the RM-11
 - Acknowledge individual channel alarms on Grid 3 EXCEPT leave RT-8012 and RT-8013 alarms blinking. DO NOT ACKNOWLEDGE these alarms.
 - Turn off the pump for RT-8011 is OFF.
 - Place the simulator back in FREEZE
- 7) Place simulator in run when the examiners are ready to proceed.
- 8) There is no simulator lesson for either of these JPMs.

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

SAT/UNSAT Performance Step: 1

Start time: _____

Respond to the AUTO M/U REQD annunciator

Standard:

Performs the following in accordance with the annunciator response:

_____ *Places the makeup system is in AUTO*

_____ *Turns the RC M/U CONT SYS ON switch to START*

_____ *Verifies that makeup DOES NOT start*

_____ *Transitions to POP02-CV-0001, Makeup to the Reactor Coolant System to initiate manual makeup*

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Obtain a copy of 0POP04-CV-0001, Makeup to the Reactor Coolant System.

Standard:

The Applicant obtains a copy of 0POP02-CV-0001, Makeup to the Reactor Coolant System, and transitions to section 12.0, Manual Makeup to RCS.

Comment:

- The applicant should use the simulator copy of the procedure.

Cue:

Notes:

SAT/UNSAT Performance Step: 3

Verify that the boric acid and makeup water flow control valves are in "AUTO".

Standard:

Verifies following control valves in AUTO:

____ *BA FLOW CONT VLV FCV-0110A*

____ *RMW FLOW CONT VLV FCV-0111A*

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4

Place the makeup stop-control switches to the VCT and charging pump suction to the CLOSE position.

Standard:

Places following control switches to CLOSE:

_____ *TO VCT OUTL FCV-0110B*

_____ *FILL FCV-0111B*

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 5

Stop the Reactor Makeup Control system.

Standard:

Turns RC M/U CONT SYS ON switch to STOP.

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 6 (C)

Select the Reactor Makeup control Manual mode.

Standard:

Positions RC M/U CONT selector switch to MAN.

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 7 (C)

Set the "BA BATCH/GALLONS FY-0110B" to the calculated gallons.

Standard:

_____ *Determines that 137 gallons of boric acid are to be added by performing calculation.*

_____ *Sets BA BATCH/GALLONS FY-0110B integrator up for a 137 gallon batch.*

Comment:

The operator may determine a total makeup value on his/her own. If that is the case, see the cue below to direct a desired amount of total makeup.

Cue:

- As the Unit Supervisor, direct the operator to makeup 700 gallons to the RCS to restore Volume Control Tank level.
- If asked what the latest RCS boron sample results are, direct the operator to use the boron meter on the control panel.
- When asked, the in service Boric Acid Tank (BAT) boron concentration = 7530 ppm

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 8 (C)

Set the "TOTAL M/U BATCH/GALLONS FY-0111B" to the desired gallons.

Standard:

*Sets TOT M/U BATCH GALLONS FY-0111B integrator to **700** gallons.*

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 9

Set "BA FLOW CONT" to the calculated boric acid flow rate.

Standard:

_____ *Determines boric acid flow controller setpoint to be **3.9** by performing calculation.*

_____ *Sets BA FLOW CONT FK-0110A (FK-0110) potentiometer to **3.9** turns.*

Comment:

Cue:

- If asked what the latest RCS boron sample results are, direct the operator to use the boron meter on the control panel.
- When asked, the in service Boric Acid Tank (BAT) boron concentration = 7530 ppm

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 10 (C)

Start the Reactor Makeup system.

Standard:

Turns RC M/U CONT SYS ON switch to START.

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 11

Verify pumps running.

Standard:

_____ *Verifies BA XFER PUMP starts*

_____ *Verifies RMW PUMP starts*

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 11 (C)

Open either of the makeup stop valves to the VCT.

Standard:

Opens either of the following valves:

_____ *TO VCT OUTL FCV-0110B*

OR

_____ *FILL FCV-0111B*

Comment:

At the completion of this step, makeup flow should be going to the Volume Control Tank.

Cue:

If asked, as the Unit Supervisor, direct that the blend be aligned to the top of the VCT (FCV-0111B).

Notes:

SAT/UNSAT Performance Step: 12

Monitor Volume Control Tank level

Standard:

Verifies Volume Control Tank level is rising

Comment:

Cue:

Notes:

- TERMINATE THE JPM -

Stop time: _____

VERIFICATION OF COMPLETION

Job Performance Measure: S5, REACTOR MAKEUP SYSTEM FAILURE

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature _____

Date _____

JPM - STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

The unit is operating at 73% power. The AUTO M/U REQD alarm on CP-004 has just been received and acknowledged.

INITIATING CUE:

The Unit Supervisor directs you to investigate the alarm and perform any required actions

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: RESPOND TO A CONTAINMENT RAD MONITOR ALARM (RT-8012)

JPM NO.: S6

REVISION: 1

LOCATION: SIMULATOR

**JOB PERFORMANCE MEASURE WORKSHEET
SOUTH TEXAS PROJECT**

JPM Title: RESPOND TO A CONTAINMENT RAD MONITOR ALARM
(RT-8012)

JPM No.: S6

Rev. No: 1

STP Task: 11700, Respond to Radiation Monitoring System alarms

STP Objective: 11700, Respond to Radiation Monitoring System alarms per
OPOP04-RA-0001

**Related
K/A Reference:** 073 A4.01 (3.9, 3.9) Ability to manually operate and/or monitor in the
control room: Effluent release

References: OPOP04-RA-0001, Rev. 20, RADIATION MONITORING SYSTEM
ALARM RESPONSE

**Task Normally
Completed By:** RO/SRO

**Method
of Testing:** Actual Performance

**Location
of Testing:** Simulator

**Time
Critical Task:** NO

**Alternate
Path JPM:** YES

Validation Time: 15 minutes

Required Materials (Tools/Equipment):

None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

The Unit is at approximately 73% reactor power. RCB Supplementary Purge is in progress in preparation for making a Containment entry.

INITIATING CUE:

You have just received a radiation monitor alarm on the RM-11. The Unit Supervisor directs you to investigate the alarm and take any action necessary.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

The Applicant determines that RT-8012 indicates above the high alarm setpoint and isolates the Containment Ventilation System.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

None, the applicant is expected to use the simulator copy of the procedure.

NOTES:

- 1) This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance. NO Indication type Cues are provided.

SIMULATOR SETUP:

- 1) JPMs S5 and S6 are to run together. The following steps will set up the simulator for **BOTH** JPMs.
- 2) Ensure Radio volume for both stations are set to a reasonable level.
- 3) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
- 4) Reset to IC #145 and verify:
 - Step counter position annunciator light is out
 - Red light at the end of CP-010 is out
 - ICS annunciators have stopped counting up
- 5) Check and clean the following procedures:
 - OPOP04-RA-0001, Radiation Monitoring System Alarm Response (pages 5, 6, 16-20)
 - OPOP09-AN-4M07, Annunciator Response, window E-8
 - OPOP02-CV-0001, Makeup to the Reactor Coolant System
- 6) Place the simulator in run and perform the following:
 - Set the BA BATCH and TOT M/U BATCH integrators to 10 gallons.
 - SILENCE the RM-11 alarm by depressing the "SYSTEM ACK" button.
 - Select Grid 3 on the RM-11
 - Acknowledge individual channel alarms on Grid 3 EXCEPT leave RT-8012 and RT-8013 alarms blinking. DO NOT ACKNOWLEDGE these alarms.
 - Turn off the pump for RT-8011 is OFF.
 - Place the simulator back in FREEZE
- 7) Place simulator in run when the examiners are ready to proceed.
- 8) There is no simulator lesson for either of these JPMs.

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

SAT/UNSAT Performance Step: **1(C)** **Start time:** _____

Proceed to the RM-11 Panel and call up RT-8012

OR

Proceed to the RM-23 and identify RT-8012 high alarm light lit.

Standard:

The Applicant determines that RT-8012 indicates above the high alarm setpoint.

Comment:

- Alert setpoint is 5.0 E-5 µci/cc.
- High setpoint is 5.0 E-4 µci/cc.

RT-8013 is above the alert alarm setpoint, but the applicant should focus on the monitor above the high alarm setpoint (RT-8012).

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Obtain a copy of OPOP04-RA-0001, Radiation Monitoring System Alarm Response.

Standard:

The Applicant obtains a copy of OPOP04-RA-0001, Radiation Monitoring System Alarm Response.

Comment:

- The applicant should use the simulator copy of the procedure.
- The JPM actions taken in Step 1 to determine the alarm condition(s) is considered “skill-of-the-craft” and Steps 1 - 4 of OPOP04-RA-0001 may be used by the applicant if desired.
- Applicant should transition to Addendum 3.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 3

Check Normal and Supplementary Containment Purge Fans stopped.

Standard:

The Operator Places the Supplementary Containment Purge Fans in STOP or ensures they are STOPPED:

_____ *Supply Fan 11A(21A)*

_____ *Supply Fan 11B(21B)*

_____ *Exhaust Fan 11A(21A)*

_____ *Exhaust Fan 11B(21B)*

Comment:

Normal Containment Purge Fans are already stopped and no action is required.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4(C)

Ensure the Containment Ventilation Isolation (CVI) valves are closed.

Standard:

The operator determines Containment Ventilation Isolation Actuation did NOT occur, and manually closes the following valves:

- ___ *SUPPL CNTMT PURGE "SPLY OCIV FV-9776*
- ___ *SUPPL CNTMT PURGE "SPLY ICIV MOV-0003*
- ___ *SUPPL CNTMT PURGE "EXH ICIV MOV-0005*
- ___ *SUPPL CNTMT PURGE "EXH OCIV FV-9777*
- ___ *CNTMT ATM SAMPLE ICIV RA-MOV-0001*
- ___ *CNTMT ATM SAMPLE OCIV RA-MOV-0004*
- ___ *CNTMT ATM RETURN ICIV RA-MOV-0003*
- ___ *CNTMT ATM RETURN OCIV RA-MOV-0006*

Comment:

Normal Containment Purge Valves are closed and de-energized, therefore no action is required.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 5

Ensure RT-8011 RCB Atmosphere Radiation Monitor Sample Pump has stopped.

Standard:

The operator verifies the RT-8011 Sample Pump is secured.

Comment:

RT-8011 pump was secured as part of the simulator setup.

Cue:

Notes:

SAT/UNSAT Performance Step: 6

Refer to Technical Specification 3.3.2 and 3.4.6.1 for further actions.

Standard:

The applicant determines the following Technical Specification requirements:

T.S. 3.3.2: Restore the inoperable channel within 30 days or maintain the containment purge supply and exhaust valves closed.

T.S. 3.4.6.1: (1) Restore the inoperable channel within 30 days AND (2) obtain and analyze a grab sample of the containment atmosphere at least once per 24 hours OR (3) perform an RCS inventory balance at least once per 24 hours.

Comment:

Cue:

If applicant does not refer to Technical Specifications, as Unit Supervisor direct applicant to refer to Technical Specifications.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 7

Check for increased readings on RT-8010A, RT-8010B, RT-8050, RT-8051, RT-8052, RT-8053, RT-8054, RT-8055, RT-8056, and RT-8099

Standard:

The operator checks the following Rad Monitors for increased readings:

_____ RT-8010A

_____ RT-8010B

Comment:

- The applicant should see NO increase in these readings.
- The JPM is terminated after two monitors are checked for increased reading due to the remainder of the step containing redundant actions.

Cue:

Notes:

- TERMINATE THE JPM -

Stop time: _____

VERIFICATION OF COMPLETION

Job Performance Measure: S6, RESPOND TO A CONTAINMENT RAD MONITOR
ALARM (RT-8012)

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature _____

Date _____

JPM – STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

The Unit is at approximately 73% reactor power. RCB Supplementary Purge is in progress in preparation for making a Containment entry.

INITIATING CUE:

You have just received a radiation monitor alarm on the RM-11. The Unit Supervisor directs you to investigate the alarm and take any action necessary.

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: **VERIFY CONTAINMENT ISOLATION PHASE "B"**

JPM NO.: **P1**

REVISION: **1**

LOCATION: **UNIT 1 or 2**

**JOB PERFORMANCE MEASURE WORKSHEET
SOUTH TEXAS PROJECT**

JPM Title: VERIFY CONTAINMENT ISOLATION PHASE "B"

JPM No.: P1

Rev. No: 1

STP Task: CRO82044 Respond to a Loss of All AC Power Condition

STP Objective: CRO82044 Respond to a Loss of All AC Power Condition in accordance with 0POP05-EO-EC00

Related K/A Reference: G.2.1.30 [3.9/3.4] Ability to locate and operate components, including local controls.

References: 0POP05-EO-EC00, Rev. 18, LOSS OF ALL AC POWER

Task Normally Completed By: PO/ RO

Method of Testing: Simulated

Location of Testing: Plant

Time Critical Task: NO

Alternate Path JPM: NO

Validation Time: 10 minutes

Required Materials (Tools/Equipment):

- Working copy of 0POP05-EO-EC00, Loss of All AC Power, Step 22.

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A Loss of All AC Power has occurred in the Unit and the Control Room Operators are performing step 22 of 0POP05-EO-EC00, LOSS OF ALL AC POWER. Containment pressure is 10.2 psig.

INITIATING CUE:

The Containment Isolation Phase "B" valves cannot be manually closed. The Unit Supervisor directs you, as the third RO, to complete Step 22 RNO e of 0POP05-EO-EC00.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

1(2)-CC-MOV-0291, 1(2)-CC-MOV-0318, 1(2)CC-MOV-0404, and 1(2)CC-FV-4493 have been closed or checked closed.

HANDOUTS:

Working copy of 0POP05-EO-EC00, LOSS OF ALL AC POWER, Step 22.

NOTES:

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

SAT/UNSAT Performance Step: 1

Start time: _____

Obtain a copy of 0POP05-EO-EC00.

Standard:

The operator obtains a copy of 0POP05-EO-EC00.

Comment:

Cue:

Provide the handout copy of POP05-EO-EC00, step 22

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2 (C)

Locate CC-MOVs and simulate closing CC-MOVs.

Standard:

The operator locates respective MOV and SIMULATES depressing the declutch lever and closes the valve.

_____ *"I(2)-CC-MOV-0291 RCP AND HEAT EXCHANGERS CCW SUPPLY HEADER
SECOND ISOLATION MOV OPERATOR".*

_____ *"I(2)-CC-MOV-0318 RCP AND HEAT EXCHANGERS CCW SUPPLY ORC ISOLATION
MOV OPERATOR".*

_____ *"I(2)-CC-MOV-0404 RCP AND HEAT EXCHANGERS CCW RETURN ORC
ISOLATION MOV OPERATOR".*

Comment:

Valves located 41 ft MAB PEN area under grating.

Cue:

Valve open initially; local position indication shows closed after the operator simulates closing valve.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 3

Locate and fail closed 1(2)-CC-FV-4493.

Standard:

The operator locates and SIMULATES failing closed 1(2)-CC-FV-4493 by closing "1(2)-IA-8044 INSTRUMENT AIR TO 1(2)-CC-FV-4493 SECOND ISOLATION VALVE" AND opening the petcock vent (on the pressure regulator) to 1(2)-CC-FV-4493, bleeding off any residual air pressure.

Comment:

- 1(2)-CC-FV-4493 is the outermost valve on left side of platform ladder.
- 1(2)-CV-FV-4493 assumed initially closed because the air solenoid valve is still powered.
- 1-IA-8044 is located on the cat-walk, East side of the column at the stairs (Unit 1).
- 2-IA-8044 is located on the valve stanchion for 2-CC-FV-4493 (Unit 2).

Cue:

- 1) Valve closed initially; Valve closed finally. Local position indication shows valve closure.
- 2) If operator uses handwheel to close the valve, show on the local position indicator that the valve is traveling in the open direction. **This valve fails closed on loss of air or electrical power. The handwheel can only be used to force this valve open.**

Notes:

- TERMINATE THE JPM -

Stop time:_____

VERIFICATION OF COMPLETION

Job Performance Measure: P1, VERIFY CONTAINMENT ISOLATION PHASE "B"

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature _____

Date _____

JPM - STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A Loss of All AC Power has occurred in the Unit and the Control Room Operators are performing step 22 of 0POP05-EO-EC00, LOSS OF ALL AC POWER. Containment pressure is 10.2 psig.

INITIATING CUE:

The Containment Isolation Phase "B" valves cannot be manually closed. The Unit Supervisor directs you, as the third RO, to complete Step 22 RNO e. of 0POP05-EO-EC00.

NUCLEAR TRAINING DEPARTMENT

OPERATING JOB PERFORMANCE MEASURE

TITLE: PLACE A CLASS 1E 125 VDC BATTERY CHARGER IN SERVICE

JPM NO: P2

REVISION: 1

LOCATION: UNIT 1 or 2

**JOB PERFORMANCE MEASURE WORKSHEET
SOUTH TEXAS PROJECT****JPM Title:** PLACE A CLASS 1E 125 VDC BATTERY CHARGER IN SERVICE**JPM No.:** P2**Rev. No.:** 1**STP Task:** T99155, Shift Battery Chargers.**STP Objective:** CRO 92986, Describe the local and MCR instrumentation available to monitor the Class 1E 125VDC system.**Related K/A Reference:** 000063A3.01 [2.7, 3.1] Ability to monitor automatic operation of the DC electrical distribution system, including: Meters, annunciators, dials, recorders, and indicating lights.**References:** 0POP02-EE-0001, Rev 16, ESF (Class 1E) DC Distribution System**Task Normally Completed By:** PO**Method of Testing:** Simulated**Location of Testing:** Plant**Time Critical Task:** NO**Alternate Path JPM:** YES**Validation Time:** 30 Minutes**Required Materials (Tools/Equipment)**

- Working copy of 0POP02-EE-0001, ESF (Class 1E) DC Distribution System

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the applicant):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

The unit is in Mode 1 at 100%. Annunciator 03M2 Window C1, 125V DC SYSTEM E1B11 (E2B11) TRBL has alarmed. The actions of the Annunciator Response have been performed and it has been determined that the “AC INPUT CB-1 on Battery Charger E1B11-2 (E2B11-2) has tripped. E1B11 (E2B11) Battery voltage is 125 VDC.

INITIATING CUE:

The Unit Supervisor directs you to transfer Battery Chargers to place Train ‘B’ E1B11 (E2B11) Battery Charger #1 in service in accordance with 0POP02-EE-0001, ESF (Class 1E) DC Distribution System, section 7.2.

Prior to leaving the area, ensure all procedural requirements concerning the E1B11 (E2B11) battery are met to ensure operability.

Addendum 1, Control Loop Alignment has been completed.

-DO NOT DISCLOSE INFORMATION BELOW THIS LINE-

COMPLETION CRITERIA:

Train B Channel III Battery Charger E1B11-1 (E2B11-1) is placed in service and placed on “EQUALIZE” in accordance with 0POP02-EE-0001.

HANDOUTS:

Student Handout copy of 0POP02-EE-0001, ESF (Class 1E) DC Distribution System.

NOTES:

JOB PERFORMANCE MEASURE CHECK SHEET**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, ...).

SAT / UNSAT Performance Step: 1**Start time:** _____

Obtain a copy of OPOP02-EE-0001, ESF (Class 1E) DC Distribution System.

Standard:

Obtains a copy of OPOP02-EE-0001, ESF (Class 1E) DC Distribution System.

Comment:

- 1) Provide the Student Handout copy of OPOP02-EE-0001 to the applicant.
- 2) Without power (DC OUTPUT CB-2 breaker open) the DC Voltmeters will have no indication on them (blank). With the conditions in the Initiating Cue, Battery Charger E1B11-1 (E2B11-1) DC Voltage Indication will be blank and Battery Charger E1B11-2 (E2B11-2) would have an indication of 125 VDC (as per the Initiating Cue).

Cue:

If asked Battery Charger E1B11-1 (E2B11-1) local indications are:

- Voltmeter (DC Volts) – Blank
- Ammeter (DC Amps) – 0 (Zero)
- All Breakers – OFF
- AC Light – OFF
- Ground Light – OFF

If asked Battery Charger E1B11-2 (E2B11-2) local indications are:

- Voltmeter (DC Volts) – 125VDC
- Ammeter (DC Amps) – 0 (Zero)
- Breakers – DC OUTPUT CB-2 Closed; AC INPUT CB-1 Tripped
- AC Light – OFF
- Ground Light – OFF

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT / UNSAT Performance Step: 2

Review procedure Notes and Precautions

Standard:

The applicant reviews applicable Notes and Precautions contained in the procedure.

Comment:

1. Notes/Precautions 4.7 through 4.20 (except 4.17) apply to battery charger operation.

Cue:

1. If asked how long the battery has been without a charger (reference step 4.7), inform the applicant that the Unit Supervisor is tracking operability of the battery.

Notes:

SAT / UNSAT Performance Step: 3

Perform Addendum 1, Control-Loop Alignment.

Standard:

Addendum 1, Control-Loop Alignment has been completed.

Comment:

This Addendum has been completed per the Initiating Cue.

Cue:

If asked, inform the applicant that this Addendum has been completed.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET**SAT / UNSAT Performance Step: 4**

Ensure the “FLOAT/EQUALIZE” toggle switch is in the “FLOAT” position for both battery chargers.

Standard:

Ensures the “FLOAT/EQUALIZE” toggle switch is in the “FLOAT” position for Battery Chargers E1B11-1 (E2B11-1) and E1B11-2 (E2B11-2).

Comment:

Location: 35’ EAB, Room 213, south wall on both Battery Chargers upper panel face.

Cue:

When asked, the following are the initial and final switch positions for both Battery Chargers:

INITIAL: “FLOAT/EQUALIZE” switch is in the “FLOAT” position.

FINAL: “FLOAT/EQUALIZE” switch is in the “FLOAT” position.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET**SAT / UNSAT Performance Step: 5**

Ensure the 480V AC supply breaker closed for the battery charger being placed in service.

Standard:

Verifies breaker “125V DC BATT CHGR E1B11-1 (E2B11-1)” at 480 V AC Motor Control Center E1B1 (E2B1) breaker Q2R is closed.

Comment:

Location: 35’ EAB, Switchgear Room.

Cue:

INITIAL: Breaker Handle UP

FINAL: Breaker Handle UP

Notes:

SAT / UNSAT Performance Step: 6 (C)

Ensure CLOSED the “DC OUTPUT CB-2” breaker for the battery charger being placed in service.

Standard:

Closes the “DC OUTPUT CB-2” breaker on Battery Charger E1B11-1(E2B11-1).

Comment:

Location: On Charger E1B11-1 (E2B11-1) lower panel face, right breaker.

Cue:

INITIAL: Breaker Handle DOWN

FINAL: Breaker Handle UP

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET**SAT / UNSAT Performance Step: 7**

Ensure CLOSED the “AC INPUT CB-1” breaker for the battery charger being placed in service.

Standard:

Determines the AC INPUT CB-1 breaker tripped open after closure.

Comment:

Location: On Battery Charger E1B11-1 (E2B11-1) lower panel face, left breaker.

When the applicant simulates closing this breaker, the evaluator should indicate the breaker has tripped (mid-position).

Cue:

1) INITIAL: Breaker Handle DOWN

FINAL: Breaker Handle MID-POSITION (tripped)

2) After Breaker Closure:

- Battery Charger Current initially spikes to 260 amps, then decreases to 0.
- DC Voltage initially increases to 130 VDC, then goes to 0.

3) After Breaker Trips:

- Charger Current: 0 amps
- DC Voltage: 125VDC
- No alarm lights or abnormal indications: “GROUND” light is NOT LIT and did not come on when AC INPUT CB-1 breaker was closed.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET**SAT / UNSAT Performance Step: 8**

Inform the Unit/Shift Supervisor of the condition.

Standard:

Informs the Unit/Shift Supervisor of the condition.

Comment:

Per the procedure NOTE prior to Step 7.2.5, the Unit/Shift Supervisor can direct the Charger output breaker be re-closed one time if no apparent cause for the trip could be identified.

Cue:

As Unit Supervisor, inform the applicant to stop in the procedure until Electrical Maintenance can be consulted.

After a few seconds, as the Unit Supervisor, inform the applicant that it is now **75 minutes later** and current conditions are:

- Electrical Maintenance has been consulted and has recommended one re-closure on the AC INPUT CB-1 breaker.
- The breaker has been reset to the fully open (“OFF”) position.

As the Unit Supervisor, direct the applicant to:

- Resume with the current step of the procedure to close the AC INPUT CB-1 breaker.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT / UNSAT Performance Step: 9 (C)

Close the “AC INPUT CB-1” breaker for the battery charger being placed in service.

Standard:

Closes the “AC INPUT CB-1” breaker on Battery Charger E1B11-1 (E2B11-1).

Comment:

Location: On Charger E1B11-1 (E2B11-1) lower panel face, left breaker.

Cue:

INITIAL: Breaker Handle DOWN FINAL: Breaker Handle UP

If asked, battery charger current is reading “0”.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET**SAT / UNSAT Performance Step: 10**

Adjust float voltage for the battery charger being placed in service.

Standard:

Adjusts float voltage to between 129.2VDC and 131.8VDC using "FLOAT" adjustment potentiometer on Battery Charger E1B11-1 (E2B11-2).

Comment:

- 1) Location: On Battery Charger E1B11-1 (E2B11-1) upper panel left side.
- 2) Applicant will use the "FLOAT" potentiometer knob, turning it clockwise or counterclockwise as needed while monitoring the VOLTMETER (DC Volts) indication to obtain the desired float voltage indication.
- 3) Procedure Step 7.2.6.1 should be marked N/A. This section was not entered from step 7.1.12.5.
- 4) Procedure Step 7.2.6.3 should be marked N/A. Paralleling of chargers is not taking place due to the AC INPUT CB-1 breaker on Battery Charger E1B11-2 (E2B11-2) having tripped open per the Initial Conditions.
- 5) Procedure Step 7.2.6.4 should be marked N/A. Charger voltage CAN BE adjusted and WILL NOT require the opening of AC INPUT CB-1 and DC OUTPUT CB-2 breakers on Battery Charger E1B11-1 (E2B11-1).

Cue:

Initial voltage indication is 125.7 VDC.

After a short time of simulated adjustment, inform the applicant that the VOLTMETER (DC Volts) is indicating 131.5VDC.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET**SAT / UNSAT Performance Step:** 11 (C)

Ensure CLOSED the “BATT CHGR TO 125V DC SWBD” breaker for the battery charger being placed in service.

Standard:

CLOSES “BATT CHGR E1B11-1(E2B11-11 TO 125V DC SWBD E1B11(E2B11)” breaker E1B11(E2B11) breaker 2A.

Comment:

Location: 35’ EAB, Room 213, south wall on E1B11(E2B11) Switchboard..

Procedure Step 7.2.8 should be marked N/A. Although the DC OUTPUT CB-2 breakers on both chargers are closed the battery chargers are not operating in parallel. This is due to the Initial Conditions with the AC INPUT CB-1 breaker tripped on Battery Charger E1B11-2 (E2B11-2).

Cue:

INITIAL: Breaker Handle DOWN FINAL: Breaker Handle UP

Notes:

SAT / UNSAT Performance Step: 12

Verify oncoming battery charger current less than 330 amps.

Standard:

Verifies E1B11-1 (E2B11-1) Battery Charger Current is less than 330 amps.

Comment:

Ammeter indication for Battery Charger E1B11-1 (E2B11-1) is on the upper panel right hand side.

Cue:

Indicate to the applicant that AMMETER indication on Battery Charger E1B11-1 (E2B11-1) indicates 100 amps.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET**SAT / UNSAT Performance Step: 13 (C)**

OPEN the “AC INPUT CB-1” breaker for the battery charger being removed form service.

Standard:

Opens “AC INPUT CB-1” breaker on E1B11-2 (E2B11-2) Battery Charger.

Comment:

Location: On Battery Charger E1B11-2 (E2B11-2) lower panel face left breaker.

Cue:

INITIAL: Breaker Handle MID-Position FINAL: Breaker Handle DOWN

Notes:

SAT / UNSAT Performance Step: 14 (C)

OPEN the “DC OUTPUT CB-2” breaker for the battery charger being removed from service.

Standard:

Opens “DC OUTPUT CB-2” breaker on E1B11-2 (E2B11-2) Battery Charger.

Comment:

Location: On Battery Charger E1B11-2 (E2B11-2) lower panel face right breaker.

Cue:

INITIAL: Breaker Handle UP FINAL: Breaker Handle DOWN

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET**SAT / UNSAT Performance Step: 15(C)**

OPEN the “BATT CHGR TO 125 V DC SWBD” breaker for the battery charger being removed from service.

Standard:

Opens “BATT CHGR E1B11-2 (E2B11-2) TO 125V DC SWBD E1B11 (E2B11)” breaker E1B11 (E2B11) breaker 3A.

Comment:

Location: 35’ EAB, Room 213, south wall on E1B11(E2B11) Switchboard..

Cue:

INITIAL: Breaker Handle UP

FINAL: Breaker Handle DOWN

Notes:

SAT / UNSAT Performance Step: 16

Verify Control Room Annunciator 3M02C-1, 125V DC SYSTEM E1B11 (E2B11) TRBL is clear.

Standard:

Verifies Control Room Annunciator 3M02C-1, 125V DC SYSTEM E1B11 (E2B11) TRBL is clear.

Comment:

Procedure step 7.2.13 should be marked N/A. Initial voltage indication was less than 126 VDC and voltage was adjusted in step 7.2.6.2.

Cue:

When applicant contacts the Control Room, report that Annunciator 3M02-C-1, 125V DC SYSTEM E1B11 (E2B11) TRBL is clear.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET**SAT / UNSAT Performance Step: 17**

Return switches to the “AS FOUND” positions per Addendum 1, Control-Loop Alignment.

Standard:

Inform the Unit/Shift Supervisor that switches are to be returned to the “AS FOUND” positions per Addendum 1, Control-Loop Alignment.

Comment:

This is the final step to placing Battery Charger E1B11-1 (E2B11-1) in service.

The procedure states that “If a Class 1E battery is NOT realigned to a operating battery charger within 15 minutes, THEN Section 9.0 must be performed prior to declaring the battery operable.

It is at this time the applicant should continue to Section 9.0.

Cue:

As the Unit Supervisor, inform the applicant that you will have another operator complete Addendum 1 to have switches returned to their “AS FOUND” position.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET**SAT / UNSAT Performance Step:** 18

Ensure a battery charger for the applicable battery is in service.

Standard:

Verifies Battery Charger E1B11-1 (E2B11-1) is in service.

Comment:

This is the first step of Section 9.0, Class 1E Battery Operability Following a Discharge Transient.

Cue:

If Asked:

- Charger E1B11-1 (E2B11-1) current is 88 amps and very slowly decreasing.
- Charger E1B11-1 (E2B11-1) voltage is 131.6VDC.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET**SAT / UNSAT Performance Step:** 19 (C)

If the discharge exceeded 1 hour, then place the applicable charger's "FLOAT/EQUALIZE" toggle switch in the EQUALIZE position.

Standard:

Places Battery Charger E1B11-1 (E2B11-1) "FLOAT/EQUALIZE" toggle switch in the EQUALIZE position.

Comment:

- 1) The battery has been discharging for >75 minutes, therefore the Battery Charger toggle switch must be placed in EQUALIZE. In EQUALIZE the Battery Charger has a higher output voltage and reduces recharge time on the battery.
- 2) The "FLOAT/EQUALIZE" switch is located on the E1B11-1 (E2B11-1) Battery Charger upper panel face.

Cue:

INITIAL: "FLOAT/EQUALIZE" switch is in the "FLOAT" position

FINAL: "FLOAT/EQUALIZE" switch is in the "EQUALIZE" position.

Notes:

-TERMINATE THE JPM-

Stop time:_____

VERIFICATION OF COMPLETION

Job Performance Measure: PLACE A CLASS 1E 125V DC BATTERY CHARGER IN
SERVICE

Performer's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator:_____ **Signature:**_____

Date: _____

JPM – STUDENT HANDOUT**READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

The unit is in Mode 1 at 100%. Annunciator 03M2 Window C1, 125V DC SYSTEM E1B11 (E2B11) TRBL has alarmed. The actions of the Annunciator Response have been performed and it has been determined that the “AC INPUT CB-1 on Battery Charger E1B11-2 (E2B11-2) has tripped. E1B11 (E2B11) Battery voltage is 125 VDC.

INITIATING CUE:

The Unit Supervisor directs you to transfer Battery Chargers to place Train ‘B’ E1B11 (E2B11) Battery Charger #1 in service in accordance with OPOP02-EE-0001, ESF (Class 1E) DC Distribution System, section 7.2.

Prior to leaving the area, ensure all procedural requirements concerning the E1B11 (E2B11) battery are met to ensure operability.

Addendum 1, Control Loop Alignment has been completed.

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ESF (Class 1E) DC Distribution System			
Quality	Safety-Related	Usage: IN HAND	Effective Date: 11/21/05

Mike Foster	S. Clark	Crew 2E	Operations
PREPARER	TECHNICAL	USER	COGNIZANT DEPT.

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Usage

- 1 - IN HAND
 2 - IN HAND CONTROLLING STATION
 3 - REFERENCED
 4 - AVAILABLE

ESF (Class 1E) DC Distribution System

1.0 Purpose

Provide instructions for operation of the ESF (Class 1E) DC Distribution System.

2.0 References

- 2.1 Technical Manual VTD-P319-0003, Power Conversion Products for Model 3SD-130-300
- 2.2 System Description 4E520ED1111, Class 1E 125 Vdc Control Power
- 2.3 0PMP05-DJ-0010, 1E Battery Equalizing Charge
- 2.4 1(2)POP09-AN-03M2, Annunciator Lampbox 1(2)-03M-2 Response Instructions
- 2.5 0PSP06-DJ-0002, 125 Volt Class 1E Battery Quarterly Surveillance Test
- 2.6 Electrical Drawings
 - 2.6.1 9-E-DJAA-01 #1(#2), 125VDC Class-1E Distribution SWBD E1A11(E2A11)
 - 2.6.2 9-E-DJAB-01 #1(#2), 125VDC Class-1E Distribution SWBD E1D11(E2D11)
 - 2.6.3 9-E-DJAC-01 #1(#2), 125VDC Class-1E Distribution SWBD E1B11(E2B11)
 - 2.6.4 9-E-DJAD-01 #1(#2), 125VDC Class-1E Distribution SWBD E1C11(E2C11)
- 2.7 MATS 8500022-866 (SOER 83-005), DC Power System Failures
- 2.8 UFSAR Section 8.3.2.1
- 2.9 NRC IR 89-042
- 2.10 SPR 920485, Placed Charger in Service Less than 129 VDC
- 2.11 SR 189442, Class 1E Electrical System Min/Max Voltages
- 2.12 Design Basis Document, 4E529EB1111, Class 1E 125V DC System
- 2.13 Technical Specifications 3.0.6, 3.3.2, 3.8.1.1, 3.8.1.2, 3.8.1.3, 3.8.2.1, 3.8.2.2, 3.8.3.1, and 3.8.3.2
- 2.14 TRM 3.8.2.2
- 2.15 Calculation EC-5008, Class 1E Battery, Battery Charger and Inverter Sizing
- 2.16 CR 97-20070, Class 1E Battery Charger Overvoltage

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- 2.17 ST-HL-AE-4254, Reply to Notice of Violation 9226-02 Regarding Failure to Maintain Adequate Procedures
- 2.18 Engineering Evaluation CREE 98-9069-5
- 2.19 CREE 99-3416, Evaluate DC voltage values used in 0PSP03-EA-0002
- 2.20 CREE 01-5161-1, Battery Charger Operability when reconnected to charger.
- 2.21 CREE 01-19885-7, CREE to justify jumpering 2 and 3 cells of the U1 C train battery.
- 2.22 T1-01-19885-1, T1-01-19885-2, T1-01-19885-8, Jumpering cells in U1 C train battery.
- 2.23 02-9755-12, LER 2-02-003, U2 experienced an automatic Rx trip after failure of Channel II Invertor (1202) and loss of DP 1202.
- 2.24 OE16455 - Discharge of Station Batteries During a Bus Outage
- 2.25 DCP 04-5417-1 S0, Class 1E Battery Charger Paralleling
- 2.26 SCAQ 05-13732, Technical Specification Implementation during DC Switchboard Outages

3.0 Prerequisites

- 3.1 Battery room ventilation is in service.
- 3.2 Battery cell fill caps and flash arrestors are in place on each cell.
- 3.3 Power is available to the following:
 - 3.3.1 Channel I - 480V MCCs E1A1(E2A1) and E1A2(E2A2)
 - 3.3.2 Channel II - 480V MCCs E1A1(E2A1) and E1A4(E2A4)
 - 3.3.3 Channel III - 480V MCCs E1B1(E2B1) and E1B2(E2B2)
 - 3.3.4 Channel IV - 480V MCCs E1C1(E2C1) and E1C2(E2C2)
- 3.4 IF work will be performed in the battery room, THEN the Emergency Wash Station or portable eye wash is available.

ESF (Class 1E) DC Distribution System

4.0 Notes and Precautions

- 4.1 Battery room ventilation SHALL remain in continuous operation.
- 4.2 IF battery room ventilation is lost during an equalizing charge, THEN Electrical Maintenance SHALL be notified to secure the equalizing charge.
- 4.3 IF battery acid comes in contact with the skin or eyes, THEN the following SHALL be performed:
- The affected area SHALL be flushed at the Emergency Wash Station.
 - Control Room personnel SHALL be notified.
- 4.4 Smoking and activities which could produce sparks or flames are prohibited in the battery room.
- 4.5 Tools used in the battery room SHALL be insulated and sparkless.
- 4.6 All battery cell flash arrestors and fill caps SHALL be kept secure in place.

NOTE

The 15 minute allowance to not perform Section 9.0, Class 1E Battery Operability Following a Discharge Transient, is based upon the Class 1E battery's design capacity, even with one battery cell jumpered out of the battery bank. IF more than one cell in the battery bank is jumpered out of the battery bank, then there is no allowance for 15 minutes to restore the battery bank to the charger and Section 9.0 must be performed.

- 4.7 A Class 1E battery is **INOPERABLE** anytime it is **NOT** aligned to an operating battery charger.
- 4.7.1 IF a Class 1E battery is realigned to an operating battery charger in less than or equal to **15 minutes** AND **only up to one battery cell is jumpered out**, THEN the Class 1E battery may be declared **OPERABLE** after verifying the operating battery charger normal float voltage is greater than or equal to 129.2 VDC. (Reference 2.20, 2.21, 2.22)
- 4.7.2 IF a Class 1E battery is **NOT** realigned to an operating battery charger within **15 minutes** OR **more than one battery cell is jumpered out**, THEN Section 9.0, Class 1E Battery Operability Following a Discharge Transient, must be performed prior to declaring the battery operable. (Reference 2.18, 2.21, 2.22)

ESF (Class 1E) DC Distribution System

- 4.8 Operations expectations for battery chargers relative to Technical Specification actions.
- A battery is inoperable without a battery charger in service and battery charger current less than 2 amps. (Technical Specification action 3.8.2.1.a or Technical Specification action 3.8.2.2)
 - Placing an inoperable battery charger on the DC bus to complete maintenance or surveillance testing requires entry into Technical Specification 3.8.2.1 action b or the action of Technical Specification 3.8.2.2 since the battery is now being supplied by an inoperable charger and the operable charger is NOT connected to the bus. When WE are in shutdown modes of operation, WE must review TRM section 3.8.2.2 to ensure we understand the effects of this evolution. WE must ensure we know the extent of the maintenance or testing with the inoperable battery charger on the DC bus to prevent entry into a shutdown portion of action b. IF the operability testing will take longer than two (2) hours, THEN we need an administrative plan to enter Technical Specification 3.0.6 and ensure the battery charger is supplying the battery properly within 15 minutes.
 - If there are trouble alarms and we declare the in-service battery charger inoperable, we must enter Technical Specification 3.8.2.1 action b or the appropriate action of Technical Specification 3.8.2.2 until we place the standby battery charger in-service and verify proper voltage.
- 4.9 WHEN energizing a battery charger, THEN the battery charger DC OUTPUT breaker SHALL be closed prior to closing AC INPUT breaker.
- 4.10 WHEN deenergizing a battery charger, THEN the battery charger AC INPUT breaker SHALL be opened prior to opening DC OUTPUT breaker.
- 4.11 IF a ground fault exists on a battery charger as indicated by a red ground fault light on front of the charger panel, THEN the following SHALL be performed at the discretion of the Shift Supervisor:
- 4.11.1 Removal of the affected battery charger from service.
 - 4.11.2 Placing the standby battery charger in operation on the affected bus.
- 4.12 Simultaneous testing or maintenance on redundant battery chargers SHALL NOT be performed. (Reference 2.7)
- 4.13 Equalizing charges SHALL be performed by Electrical Maintenance per OPMP05-DJ-0010, 1E Battery Equalizing Charge.
- 4.14 IF a battery charger is selected to EQUALIZE, THEN Electrical Maintenance SHALL be notified prior to transferring, or removing the battery charger from service.

ESF (Class 1E) DC Distribution System

- 4.15 The maximum and minimum limits for the Class 1E battery chargers are as follows:
(Reference 2.11, 2.19)
- 4.15.1 The maximum limit for battery charger voltage is 140 VDC. IF charger voltage is greater than 140 VDC, THEN the “AC INPUT CB-1” breaker for the battery charger **SHALL** be Opened **IMMEDIATELY** to prevent damage to system components. (Reference 2.16)
- 4.15.2 The DC output limits for normal float operation of the chargers is 129.2 to 131.8 VDC.
- 4.15.3 The DC output limits for equalize operation of the charger is 135.2 to 137.3 VDC.
- 4.16 Class 1E battery charger **SHALL** be paralleled for less than or equal to 15 minutes.
(Reference 2.25)
- 4.17 Opening battery output breaker results in Standby DG being **INOPERABLE**, take appropriate actions per Technical Specifications 3.8.1.1, 3.8.1.2, 3.8.1.3, 3.8.2.1, 3.8.2.2, 3.8.3.1, 3.8.3.2, and TRM 3.8.2.2.
- 4.18 Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- 4.19 Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor **MAY** authorize a different control-loop alignment.
- 4.20 If “AC INPUT CB-1” breaker trips and no apparent cause for the trip is identified, the Shift/Unit Supervisor may direct the breaker to be re-closed one time. The battery charger **SHALL** be declared inoperable if the breaker trips a second time.
- 4.21 OPSP06-DJ-0002, 125 Volt Class 1E Battery Quarterly Surveillance Test, must be run within 7 days after a battery discharge when battery terminal voltage is less than 110 VDC or battery overcharge with terminal voltage greater than 135 VDC.
- 4.22 Inverter internal loads can result in battery discharge even when the inverter is unloaded.
(Reference 2.24)

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- 4.23 Deenergizing Bus E1A11(E2A11) requires entry into Technical Specification 3.3.2, action c, Table 3.3-3, action 27 for Control Room Ventilation and actions 29 and 30 for FHB HVAC. (Reference 2.26)
- Deenergizes DC DIST PNL PL039A
 - Deenergizes Train A Aux Relay Panel RR143A
 - Disables manual and automatic actuation signals for Train A CR HVAC
 - Disables manual and automatic actuation signals for Train A FHB HVAC
- 4.24 Deenergizing Bus E1B11(E2B11) requires entry into Technical Specification 3.3.2, action c, Table 3.3-3, action 27 for Control Room Ventilation and actions 29 and 30 for FHB HVAC. (Reference 2.26)
- Deenergizes DC DIST PNL PL039B
 - Deenergizes Train B Aux Relay Panel RR144B
 - Disables manual and automatic actuation signals for Train B CR HVAC
 - Disables manual and automatic actuation signals for Train B FHB HVAC
- 4.25 Deenergizing Bus E1C11(E2C11) requires entry into Technical Specification 3.3.2, action c, Table 3.3-3, action 27 for Control Room Ventilation and actions 29 and 30 for FHB HVAC. (Reference 2.26)
- Deenergizes DC DIST PNL PL039C
 - Deenergizes Train C Aux Relay Panel RR145C
 - Disables manual and automatic actuation signals for Train C CR HVAC
 - Disables manual and automatic actuation signals for Train C FHB HVAC

ESF (Class 1E) DC Distribution System

5.0 Train A Channel I E1A11(E2A11) OperationNOTE

- All switches and breakers required for the performance of Section 5.0 are located in Train A Channel I Distribution Room 007 { 10 ft EAB}, unless otherwise specified.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

5.1 Placing Train A Channel I E1A11(E2A11) in Service

5.1.1 PERFORM Addendum 1, Control-Loop Alignment. _____

5.1.2 ENSURE the “FLOAT/EQUALIZE” toggle switch in the “FLOAT” position for the battery charger being placed in service.

E1A11(E2A11)-1E1A11(E2A11)-2“FLOAT/EQUALIZE”
Switch in “FLOAT” _____“FLOAT/EQUALIZE”
Switch in “FLOAT” _____

5.1.3 ENSURE the 480V AC SUPPLY BREAKER CLOSED for the battery charger being placed in service. { 10 ft EAB, E1A(E2A) SWGR Rm }

E1A11(E2A11)-1E1A11(E2A11)-2“125V DC BATT CHGR
E1A11(E2A11)-1”
MCC E1A1(E2A1)/Q1R _____“125V DC BATT CHGR
E1A11(E2A11)-2”
MCC E1A2(E2A2)/A2L _____

5.1.4 ENSURE the “125V BATT E1A11(E2A11) TO 125V DC SWBD E1A11(E2A11)” breaker CLOSED. { SWBD E1A11(E2A11)/1B } _____

ESF (Class 1E) DC Distribution System

- 5.1.5 CLOSE the BATT CHGR TO 125V DC SWBD breaker for the battery charger being placed in service.

E1A11(E2A11)-1

E1A11(E2A11)-2

“BATT CHGR E1A11(E2A11)-1
TO 125V DC SWBD E1A11(E2A11)”
E1A11(E2A11)/3A _____

“BATT CHGR E1A11(E2A11)-2
TO 125V DC SWBD E1A11(E2A11)”
E1A11(E2A11)/2A _____

- 5.1.6 CLOSE the “DC OUTPUT CB-2” breaker for the battery charger being placed in service.

E1A11(E2A11)-1

E1A11(E2A11)-2

“DC OUTPUT CB-2” _____

“DC OUTPUT CB-2” _____

CAUTION

IF charger voltage increases to greater than 140 VDC, THEN the “AC INPUT CB-1” breaker for the battery charger SHALL be Opened IMMEDIATELY to prevent damage to system components. (Reference 2.16)

NOTE

If “AC INPUT CB-1” breaker trips and no apparent cause for the trip is identified, the Shift/Unit Supervisor may direct the breaker to be re-closed one time. The battery charger SHALL be declared inoperable if the breaker trips a second time.

- 5.1.7 CLOSE the “AC INPUT CB-1” breaker for the battery charger being placed in service.

E1A11(E2A11)-1

E1A11(E2A11)-2

“AC INPUT CB-1” _____

“AC INPUT CB-1” _____

- 5.1.8 VERIFY battery charger voltage between 126 and 135 VDC. IF battery charger voltage is NOT between 126 and 135 VDC, THEN NOTIFY the Shift Supervisor. _____

- 5.1.9 PERFORM Lineup 1, SWBD E1A11(E2A11) Channel I Lineup. _____

- 5.1.10 VERIFY battery charger current less than 330 amps. _____

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- 5.1.11 VERIFY battery charger voltage between 129.2 and 131.8 VDC.
(Reference 2.10, 2.11, 2.13, and 2.19) _____
- 5.1.12 IF battery charger voltage is NOT between 129.2 and 131.8 VDC,
THEN PERFORM the following: _____
- 5.1.12.1 IF charger voltage exceeds 140 VDC, THEN
IMMEDIATELY OPEN the “AC INPUT CB-1”
breaker of the charger. _____
- a. NOTIFY the Shift Supervisor. _____
- b. GO TO Step 5.3 to complete shutdown of the
battery charger. _____
- 5.1.12.2 IF charger voltage exceeds 137.3 VDC, THEN NOTIFY
the Shift Supervisor AND GO TO Step 5.2 to transfer
to the other battery charger. _____
- 5.1.12.3 IF battery charger voltage exceeds 131.8 VDC, THEN
NOTIFY the Shift Supervisor AND ADJUST float
voltage between 129.2 and 131.8 VDC. _____
- 5.1.12.4 IF battery charger voltage is less than 129.2 VDC but
greater than or equal to 126 VDC, THEN NOTIFY the
Shift Supervisor AND ADJUST float voltage between
129.2 and 131.8 VDC. _____
- 5.1.12.5 IF battery charger voltage is less than 126 VDC, THEN
NOTIFY the Shift Supervisor AND GO TO Step 5.2 to
transfer to the other battery charger. _____
- 5.1.12.6 INITIATE appropriate corrective action. _____
- 5.1.13 IF Annunciator Lampbox 3M02-A-1 “125V DC SYSTEM
E1A11(E2A11) TRBL” is illuminated, THEN TAKE appropriate
action per 1(2)POP09-AN-03M2, Annunciator
Lampbox 1(2)-03M-2 Response Instructions. _____
- 5.1.14 RETURN switches to the “AS FOUND” positions per Addendum 1,
Control-Loop Alignment. _____

ESF (Class 1E) DC Distribution System

5.2 Transfer of Train A Channel I Battery Chargers

CAUTION

- A Class 1E battery is **INOPERABLE** anytime it is **NOT** aligned to an operating battery charger.
- IF a Class 1E battery is realigned to an operating battery charger in less than or equal to **15 minutes AND only up to one battery cell is jumpered out**, THEN the Class 1E battery may be declared **OPERABLE** after verifying the operating battery charger normal float voltage is greater than or equal to 129.2 VDC. (Reference 2.20, 2.21, 2.22)
- IF a Class 1E battery is **NOT** realigned to an operating battery charger within **15 minutes OR more than one battery cell is jumpered out**, THEN Section 9.0, Class 1E Battery Operability Following a Discharge Transient, must be performed prior to declaring the battery operable. (Reference 2.18, 2.21, 2.22)

NOTE

- All switches and breakers required for the performance of Section 5.0 are located in Train A Channel I Distribution Room 007 {10 ft EAB}, unless otherwise specified.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

5.2.1 PERFORM Addendum 1, Control-Loop Alignment. _____

5.2.2 ENSURE the “FLOAT/EQUALIZE” toggle switch in the “FLOAT” position for both battery chargers.

E1A11(E2A11)-1

“FLOAT/EQUALIZE”
Switch in “FLOAT” _____

E1A11(E2A11)-2

“FLOAT/EQUALIZE”
Switch in “FLOAT” _____

ESF (Class 1E) DC Distribution System

- 5.2.3 ENSURE CLOSED the 480V AC SUPPLY BREAKER for the battery charger being placed in service. { 10 ft EAB, E1A(E2A) SWGR Rm}

E1A11(E2A11)-1

E1A11(E2A11)-2

“125V DC BATT CHGR
E1A11(E2A11)-1”
MCC E1A1(E2A1)/Q1R _____

“125V DC BATT CHGR
E1A11(E2A11)-2”
MCC E1A2(E2A2)/A2L _____

- 5.2.4 ENSURE CLOSED the “DC OUTPUT CB-2” breaker for the battery charger being placed in service.

E1A11(E2A11)-1

E1A11(E2A11)-2

“DC OUTPUT CB-2” _____

“DC OUTPUT CB-2” _____

NOTE

If “AC INPUT CB-1” breaker trips and no apparent cause for the trip is identified, the Shift/Unit Supervisor may direct the breaker to be re-closed one time. The battery charger SHALL be declared inoperable if the breaker trips a second time.

- 5.2.5 ENSURE CLOSED the “AC INPUT CB-1” breaker for the battery charger being placed in service.

E1A11(E2A11)-1

E1A11(E2A11)-2

“AC INPUT CB-1” _____

“AC INPUT CB-1” _____

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CAUTION

IF charger voltage increases to greater than 140 VDC, THEN the “AC INPUT CB-1” breaker for the battery charger **SHALL** be Opened IMMEDIATELY to prevent damage to system components. (Reference 2.16)

5.2.6 ADJUST float voltage for the battery charger being placed in service:

- 5.2.6.1 IF Section 5.2 was entered due to inservice battery charger voltage less than 126 VDC per Step 5.1.12.5, THEN GO TO Step 5.2.6.3
- 5.2.6.2 Between 129.2 and 131.8 VDC
- 5.2.6.3 IF paralleling chargers, THEN within -.2 and +.2 VDC of battery charger in service
- 5.2.6.4 IF charger voltage can **NOT** be adjusted to the float band of Steps 5.2.6.2 and 5.2.6.3 as applicable, THEN OPEN the following breakers AND NOTIFY the Unit/Shift Supervisor, OTHERWISE N/A.
- “AC INPUT CB-1”
 - “DC OUTPUT CB-2”

NOTE

Class 1E battery charger **SHALL** be paralleled for less than or equal to 15 minutes. (Reference 2.25)

5.2.7 ENSURE CLOSED the BATT CHGR TO 125V DC SWBD breaker for the battery charger being placed in service.

E1A11(E2A11)-1

E1A11(E2A11)-2

“BATT CHGR E1A11(E2A11)-1
TO 125V DC SWBD E1A11(E2A11)”
E1A11(E2A11)/3A _____

“BATT CHGR E1A11(E2A11)-2
TO 125V DC SWBD E1A11(E2A11)”
E1A11(E2A11)/2A _____

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- 5.2.8 IF paralleling chargers, THEN slowly REDUCE float voltage for the battery charger being removed from service until all load is transferred to the oncoming battery charger as indicated by 0.0 amps on charger amp meter. _____
- 5.2.9 VERIFY oncoming battery charger current less than 330 amps. _____
- 5.2.10 OPEN the “AC INPUT CB-1” breaker for the battery charger being removed from service.
- E1A11(E2A11)-1 E1A11(E2A11)-2
- “AC INPUT CB-1” _____ “AC INPUT CB-1” _____
- 5.2.11 OPEN the “DC OUTPUT CB-2” breaker for the battery charger being removed from service.
- E1A11(E2A11)-1 E1A11(E2A11)-2
- “DC OUTPUT CB-2” _____ “DC OUTPUT CB-2” _____
- 5.2.12 OPEN the BATT CHGR TO 125V DC SWBD breaker for the battery charger being removed from service.
- E1A11(E2A11)-1 E1A11(E2A11)-2
- “BATT CHGR E1A11(E2A11)-1 TO 125V DC SWBD E1A11(E2A11)” E1A11(E2A11)/3A _____ “BATT CHGR E1A11(E2A11)-2 TO 125V DC SWBD E1A11(E2A11)” E1A11(E2A11)/2A _____
- 5.2.13 IF float voltage was **NOT** adjusted in Step 5.2.6.2 due to inservice battery charger voltage less than 126 VDC, THEN ADJUST float voltage Between 129.2 and 131.8 VDC _____
- 5.2.14 IF Annunciator Lampbox 3M02-A-1 “125V DC SYSTEM E1A11(E2A11) TRBL” is illuminated, THEN TAKE appropriate action per 1(2)POP09-AN-03M2, Annunciator Lampbox 1(2)-03M-2 Response Instructions. _____
- 5.2.15 RETURN switches to the “AS FOUND” positions per Addendum 1, Control-Loop Alignment. _____

ESF (Class 1E) DC Distribution System

5.3 Removing Train A Channel I E1A11(E2A11) from Service

NOTE

- All switches and breakers required for the performance of Section 5.0 are located in Train A Channel I Distribution Room 007 {10 ft EAB}, unless otherwise specified.
- Opening battery output breaker results in Standby DG being **INOPERABLE**, take appropriate actions per Technical Specifications 3.8.1.1, 3.8.1.2, 3.8.1.3, 3.8.2.1, 3.8.2.2, 3.8.3.1, 3.8.3.2, and TRM 3.8.2.2.
 - Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.
- Deenergizing Bus E1A11(E2A11) requires entry into Technical Specification 3.3.2, action c, Table 3.3-3, action 27 for Control Room Ventilation and actions 29 and 30 for FHB HVAC. (Reference 2.26)
 - Deenergizes DC DIST PNL PL039A
 - Deenergizes Train A Aux Relay Panel RR143A
 - Disables manual and automatic actuation signals for Train A CR HVAC
 - Disables manual and automatic actuation signals for Train A FHB HVAC

5.3.1 **PERFORM** Addendum 1, Control-Loop Alignment. _____

5.3.2 **IF** it is desired to disconnect the 125V DC BATT from the 125V DC SWBD, **THEN** OPEN the “125V BATT E1A11(E2A11) TO 125V DC SWBD E1A11(E2A11)” breaker. {SWBD E1A11(E2A11)/1B} _____

5.3.3 OPEN the “AC INPUT CB-1” breaker for the battery charger being removed from service.

E1A11(E2A11)-1

E1A11(E2A11)-2

“AC INPUT CB-1” _____

“AC INPUT CB-1” _____

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5.3.4 OPEN the “DC OUTPUT CB-2” breaker for the battery charger being removed from service.

E1A11(E2A11)-1

E1A11(E2A11)-2

“DC OUTPUT CB-2” _____

“DC OUTPUT CB-2” _____

5.3.5 OPEN the BATT CHGR TO 125V DC SWBD breaker for the battery charger being removed service.

E1A11(E2A11)-1

E1A11(E2A11)-2

“BATT CHGR E1A11(E2A11)-1
TO 125V DC SWBD E1A11(E2A11)”
E1A11(E2A11)/3A _____

“BATT CHGR E1A11(E2A11)-2
TO 125V DC SWBD E1A11(E2A11)”
E1A11(E2A11)/2A _____

5.3.6 RETURN switches to the “AS FOUND” positions per Addendum 1, Control-Loop Alignment. _____

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6.0 Train D Channel II E1D11(E2D11) Operation**NOTE**

- All switches and breakers required for the performance of Section 6.0 are located in Train D Channel II Distribution Room 009 { 10 ft EAB }, unless otherwise specified.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

6.1 Placing Train D Channel II E1D11(E2D11) in Service

6.1.1 PERFORM Addendum 1, Control-Loop Alignment. _____

6.1.2 ENSURE the “FLOAT/EQUALIZE” toggle switch in the “FLOAT” position for the battery charger being placed in service.

E1D11(E2D11)-1E1D11(E2D11)-2“FLOAT/EQUALIZE”
Switch in “FLOAT” _____“FLOAT/EQUALIZE”
Switch in “FLOAT” _____

6.1.3 ENSURE the 480V AC SUPPLY BREAKER closed for the battery charger being placed in service. { 10 ft EAB, E1A(E2A) SWGR Rm }

E1D11(E2D11)-1E1D11(E2D11)-2“125V DC BATT CHGR
E1D11(E2D11)-1”
MCC E1A4(E2A4)/F3L _____“125V DC BATT CHGR
E1D11(E2D11)-2”
MCC E1A1(E2A1)/T3R _____

6.1.4 ENSURE the “125V BATT E1D11(E2D11) TO 125V DC SWBD E1D11(E2D11)” breaker closed. {SWBD E1D11(E2D11)/1B} _____

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- 6.1.5 CLOSE the BATT CHGR TO 125V DC SWBD breaker for the battery charger being placed in service.

E1D11(E2D11)-1

E1D11(E2D11)-2

“BATT CHGR E1D11(E2D11)-1
TO 125V DC SWBD E1D11(E2D11)”
E1D11(E2D11)/2A _____

“BATT CHGR E1D11(E2D11)-2
TO 125V DC SWBD E1D11(E2D11)”
E1D11(E2D11)/3A _____

- 6.1.6 CLOSE the “DC OUTPUT CB-2” breaker for the battery charger being placed in service.

E1D11(E2D11)-1

E1D11(E2D11)-2

“DC OUTPUT CB-2” _____

“DC OUTPUT CB-2” _____

CAUTION

IF charger voltage increases to greater than 140 VDC, THEN the “AC INPUT CB-1” breaker for the battery charger SHALL be Opened IMMEDIATELY to prevent damage to system components. (Reference 2.16)

NOTE

If “AC INPUT CB-1” breaker trips and no apparent cause for the trip is identified, the Shift/Unit Supervisor may direct the breaker to be re-closed one time. The battery charger SHALL be declared inoperable if the breaker trips a second time.

- 6.1.7 CLOSE the “AC INPUT CB-1” breaker for the battery charger being placed in service.

E1D11(E2D11)-1

E1D11(E2D11)-2

“AC INPUT CB-1” _____

“AC INPUT CB-1” _____

- 6.1.8 VERIFY battery charger voltage between 126 and 135 VDC. IF battery charger voltage is NOT between 126 and 135 VDC, THEN NOTIFY the Shift Supervisor. _____

- 6.1.9 PERFORM Lineup 2, SWBD E1D11(E2D11) Channel II Lineup. _____

- 6.1.10 VERIFY battery charger current less than 330 amps. _____

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- 6.1.11 VERIFY battery charger voltage between 129.2 and 131.8 VDC.
(Reference 2.10, 2.11, 2.13, and 2.19)
- 6.1.12 IF battery charger voltage is NOT between 129.2 and 131.8 VDC,
THEN PERFORM the following:
- 6.1.12.1 IF charger voltage exceeds 140 VDC, THEN
IMMEDIATELY OPEN the “AC INPUT CB-1”
breaker of the charger.
- a. NOTIFY the Shift Supervisor.
- b. GO TO Step 6.3 to complete shutdown of the
battery charger.
- 6.1.12.2 IF charger voltage exceeds 137.3 VDC, THEN NOTIFY
the Shift Supervisor AND GO TO Step 6.2 to transfer to
the other battery charger.
- 6.1.12.3 IF battery charger voltage exceeds 131.8 VDC, THEN
NOTIFY the Shift Supervisor AND ADJUST float
voltage between 129.2 and 131.8 VDC.
- 6.1.12.4 IF battery charger voltage is less than 129.2 VDC but
greater than or equal to 126 VDC, THEN NOTIFY the
Shift Supervisor AND ADJUST float voltage between
129.2 and 131.8 VDC.
- 6.1.12.5 IF battery charger voltage is less than 126 VDC, THEN
NOTIFY the Shift Supervisor AND GO TO Step 6.2 to
transfer to the other battery charger.
- 6.1.12.6 INITIATE appropriate corrective action.
- 6.1.13 IF Annunciator Lampbox 3M02-B-1 “125V DC SYSTEM
E1D11(E2D11) TRBL” is illuminated, THEN TAKE appropriate
action per 1(2)POP09-AN-03M2, Annunciator Lampbox 1(2)-03M-2
Response Instructions.
- 6.1.14 RETURN switches to the “AS FOUND” positions per Addendum 1,
Control-Loop Alignment.

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6.2 Transfer of Train D Channel II Battery Chargers

CAUTION

- A Class 1E battery is **INOPERABLE** anytime it is **NOT** aligned to an operating battery charger.
- **IF** a Class 1E battery is realigned to an operating battery charger in less than or equal to **15 minutes AND only up to one battery cell is jumpered out**, **THEN** the Class 1E battery may be declared **OPERABLE** after verifying the operating battery charger normal float voltage is greater than or equal to 129.2 VDC. (Reference 2.20, 2.21, 2.22)
- **IF** a Class 1E battery is **NOT** realigned to an operating battery charger within **15 minutes OR more than one battery cell is jumpered out**, **THEN** Section 9.0, Class 1E Battery Operability Following a Discharge Transient, must be performed prior to declaring the battery operable. (Reference 2.18, 2.21, 2.22)

NOTE

- All switches and breakers required for the performance of Section 6.0 are located in Train D Channel II Distribution Room 009 {10 ft EAB}, unless otherwise specified.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

6.2.1 PERFORM Addendum 1, Control-Loop Alignment.

6.2.2 ENSURE the “FLOAT/EQUALIZE” toggle switch in the “FLOAT” position for both battery chargers.

E1D11(E2D11)-1

“FLOAT/EQUALIZE”
Switch in “FLOAT” _____

E1D11(E2D11)-2

“FLOAT/EQUALIZE”
Switch in “FLOAT” _____

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- 6.2.3 ENSURE CLOSED the 480V AC SUPPLY BREAKER for the battery charger being placed in service. { 10 ft EAB, E1A(E2A) SWGR Rm}

E1D11(E2D11)-1

E1D11(E2D11)-2

“125V DC BATT CHGR
E1D11(E2D11)-1”
MCC E1A4(E2A4)/F3L _____

“125V DC BATT CHGR
E1D11(E2D11)-2”
MCC E1A1(E2A1)/T3R _____

- 6.2.4 ENSURE CLOSED the “DC OUTPUT CB-2” breaker for the battery charger being placed in service.

E1D11(E2D11)-1

E1D11(E2D11)-2

“DC OUTPUT CB-2” _____

“DC OUTPUT CB-2” _____

NOTE

If “AC INPUT CB-1” breaker trips and no apparent cause for the trip is identified, the Shift/Unit Supervisor may direct the breaker to be re-closed one time. The battery charger SHALL be declared inoperable if the breaker trips a second time.

- 6.2.5 ENSURE CLOSED the “AC INPUT CB-1” breaker for the battery charger being placed in service.

E1D11(E2D11)-1

E1D11(E2D11)-2

“AC INPUT CB-1” _____

“AC INPUT CB-1” _____

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CAUTION

IF charger voltage increases to greater than 140 VDC, THEN the “AC INPUT CB-1” breaker for the battery charger **SHALL** be Opened IMMEDIATELY to prevent damage to system components. (Reference 2.16)

6.2.6 ADJUST float voltage for the battery charger being placed in service:

- 6.2.6.1 IF Section 6.2 was entered due to inservice battery charger voltage less than 126 VDC per Step 6.1.12.5, THEN GO TO Step 6.2.6.3
- 6.2.6.2 Between 129.2 and 131.8 VDC
- 6.2.6.3 IF paralleling chargers, THEN within -.2 and +.2 VDC of battery charger in service
- 6.2.6.4 IF charger voltage can **NOT** be adjusted to the float band of Steps 6.2.6.2 and 6.2.6.3 as applicable, THEN OPEN the following breakers AND NOTIFY the Unit/Shift Supervisor, OTHERWISE N/A.
- “AC INPUT CB-1”
 - “DC OUTPUT CB-2”

NOTE

Class 1E battery charger **SHALL** be paralleled for less than or equal to 15 minutes. (Reference 2.25)

6.2.7 ENSURE CLOSED the BATT CHGR TO 125V DC SWBD breaker for the battery charger being placed in service.

E1D11(E2D11)-1

“BATT CHGR E1D11(E2D11)-1
TO 125V DC SWBD E1D11(E2D11)”
E1D11(E2D11)/2A _____

E1D11(E2D11)-2

“BATT CHGR E1D11(E2D11)-2
TO 125V DC SWBD E1D11(E2D11)”
E1D11(E2D11)/3A _____

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- 6.2.8 IF paralleling chargers, THEN slowly REDUCE float voltage for the battery charger being removed from service until all load is transferred to the oncoming battery charger as indicated by 0.0 amps on charger amp meter. _____
- 6.2.9 VERIFY oncoming battery charger current less than 330 amps. _____
- 6.2.10 OPEN the “AC INPUT CB-1” breaker for the battery charger being removed from service.
- E1D11(E2D11)-1 E1D11(E2D11)-2
- “AC INPUT CB-1” _____ “AC INPUT CB-1” _____
- 6.2.11 OPEN the “DC OUTPUT CB-2” breaker for the battery charger being removed from service.
- E1D11(E2D11)-1 E1D11(E2D11)-2
- “DC OUTPUT CB-2” _____ “DC OUTPUT CB-2” _____
- 6.2.12 OPEN the BATT CHGR TO 125V DC SWBD breaker for the battery charger being removed from service.
- E1D11(E2D11)-1 E1D11(E2D11)-2
- “BATT CHGR E1D11(E2D11)-1 TO 125V DC SWBD E1D11(E2D11)” E1D11(E2D11)/2A _____ “BATT CHGR E1D11(E2D11)-2 TO 125V DC SWBD E1D11(E2D11)” E1D11(E2D11)/3A _____
- 6.2.13 IF float voltage was **NOT** adjusted in Step 6.2.6.2 due to inservice battery charger voltage less than 126 VDC, THEN ADJUST float voltage Between 129.2 and 131.8 VDC _____
- 6.2.14 IF Annunciator Lampbox 3M02-B-1 “125V DC SYSTEM E1D11(E2D11) TRBL” is illuminated, THEN TAKE appropriate action per 1(2)POP09-AN-03M2, Annunciator Lampbox 1(2)-03M-2 Response Instructions. _____
- 6.2.15 RETURN switches to the “AS FOUND” positions per Addendum 1, Control-Loop Alignment. _____

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6.3 Removing Train D Channel II E1D11(E2D11) from Service

NOTE

- All switches and breakers required for the performance of Section 6.0 are located in Train D Channel II Distribution Room 009 {10 ft EAB}, unless otherwise specified.
- Opening battery output breaker results in Standby DG being **INOPERABLE**, take appropriate actions per Technical Specifications 3.8.1.1, 3.8.1.2, 3.8.1.3, 3.8.2.1, 3.8.2.2, 3.8.3.1, 3.8.3.2, and TRM 3.8.2.2.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

6.3.1 PERFORM Addendum 1, Control-Loop Alignment. _____

6.3.2 IF it is desired to disconnect the 125V DC BATT from the 125V DC SWBD, THEN OPEN the “125V BATT E1D11(E2D11) TO 125V DC SWBD E1D11(E2D11)” breaker. {SWBD E1D11(E2D11)/1B} _____

6.3.3 OPEN the “AC INPUT CB-1” breaker for the battery charger being removed from service.

E1D11(E2D11)-1

E1D11(E2D11)-2

“AC INPUT CB-1” _____

“AC INPUT CB-1” _____

6.3.4 OPEN the “DC OUTPUT CB-2” breaker for the battery charger being removed from service.

E1D11(E2D11)-1

E1D11(E2D11)-2

“DC OUTPUT CB-2” _____

“DC OUTPUT CB-2” _____

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6.3.5 OPEN the BATT CHGR TO 125V DC SWBD breaker for the battery charger being removed service.

E1D11(E2D11)-1

E1D11(E2D11)-2

“BATT CHGR E1D11(E2D11)-1
TO 125V DC SWBD E1D11(E2D11)”
E1D11(E2D11)/2A _____

“BATT CHGR E1D11(E2D11)-2
TO 125V DC SWBD E1D11(E2D11)”
E1D11(E2D11)/3A _____

6.3.6 RETURN switches to the “AS FOUND” positions per Addendum 1,
Control-Loop Alignment. _____

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7.0 Train B Channel III E1B11(E2B11) OperationNOTE

- All switches and breakers required for the performance of Section 7.0 are located in Train B Channel III Distribution Room 213 {35 ft EAB}, unless otherwise specified.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

7.1 Placing Train B Channel III E1B11(E2B11) in Service

7.1.1 PERFORM Addendum 1, Control-Loop Alignment. _____

7.1.2 ENSURE the “FLOAT/EQUALIZE” toggle switch in the “FLOAT” position for the battery charger being placed in service.

E1B11(E2B11)-1E1B11(E2B11)-2

“FLOAT/EQUALIZE”

“FLOAT/EQUALIZE”

Switch in “FLOAT” _____

Switch in “FLOAT” _____

7.1.3 ENSURE the 480V AC SUPPLY BREAKER closed for the battery charger being placed in service. {35 ft EAB, E1B(E2B) SWGR Rm}

E1B11(E2B11)-1E1B11(E2B11)-2

“125V DC BATT CHGR

“125V DC BATT CHGR

E1B11(E2B11)-1”

E1B11(E2B11)-2”

MCC E1B1(E2B1)/Q2R _____

MCC E1B2(E2B2)/A6R _____

7.1.4 ENSURE the “125V BATT E1B11(E2B11) TO 125V DC SWBD E1B11(E2B11)” breaker closed. {SWBD E1B11(E2B11)/1B} _____

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- 7.1.5 CLOSE the BATT CHGR TO 125V DC SWBD breaker for the battery charger being placed in service.

E1B11(E2B11)-1

E1B11(E2B11)-2

“BATT CHGR E1B11(E2B11)-1
TO 125V DC SWBD E1B11(E2B11)”
E1B11(E2B11)/2A _____

“BATT CHGR E1B11(E2B11)-2
TO 125V DC SWBD E1B11(E2B11)”
E1B11(E2B11)/3A _____

- 7.1.6 CLOSE the “DC OUTPUT CB-2” breaker for the battery charger being placed in service.

E1B11(E2B11)-1

E1B11(E2B11)-2

“DC OUTPUT CB-2” _____

“DC OUTPUT CB-2” _____

CAUTION

IF charger voltage increases to greater than 140 VDC, THEN the “AC INPUT CB-1” breaker for the battery charger SHALL be Opened IMMEDIATELY to prevent damage to system components. (Reference 2.16)

NOTE

If “AC INPUT CB-1” breaker trips and no apparent cause for the trip is identified, the Shift/Unit Supervisor may direct the breaker to be re-closed one time. The battery charger SHALL be declared inoperable if the breaker trips a second time.

- 7.1.7 CLOSE the “AC INPUT CB-1” breaker for the battery charger being placed in service.

E1B11(E2B11)-1

E1B11(E2B11)-2

“AC INPUT CB-1” _____

“AC INPUT CB-1” _____

- 7.1.8 VERIFY battery charger voltage between 126 and 135 VDC. IF battery charger voltage is NOT between 126 and 135 VDC, THEN NOTIFY the Shift Supervisor. _____

- 7.1.9 PERFORM Lineup 3, SWBD E1B11(E2B11) Channel III Lineup. _____

- 7.1.10 VERIFY battery charger current less than 330 amps. _____

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- 7.1.11 VERIFY battery charger voltage between 129.2 and 131.8 VDC.
(Reference 2.10, 2.11, 2.13, and 2.19)
- 7.1.12 IF battery charger voltage is NOT between 129.2 and 131.8 VDC,
THEN PERFORM the following:
- 7.1.12.1 IF charger voltage exceeds 140 VDC, THEN
IMMEDIATELY OPEN the “AC INPUT CB-1”
breaker of the charger.
- a. NOTIFY the Shift Supervisor.
- b. GO TO Step 7.3 to complete shutdown of the
battery charger.
- 7.1.12.2 IF charger voltage exceeds 137.3 VDC, THEN NOTIFY
the Shift Supervisor AND GO TO Step 7.2 to transfer to
the other battery charger.
- 7.1.12.3 IF battery charger voltage exceeds 131.8 VDC, THEN
NOTIFY the Shift Supervisor AND ADJUST float
voltage between 129.2 and 131.8 VDC.
- 7.1.12.4 IF battery charger voltage is less than 129.2 VDC but
greater than or equal to 126 VDC, THEN NOTIFY the
Shift Supervisor AND ADJUST float voltage between
129.2 and 131.8 VDC.
- 7.1.12.5 IF battery charger voltage is less than or 126 VDC,
THEN NOTIFY the Shift Supervisor AND GO TO Step
7.2 to transfer to the other battery charger.
- 7.1.12.6 INITIATE appropriate corrective action.
- 7.1.13 IF Annunciator Lampbox 3M02-C-1 “125V DC SYSTEM
E1B11(E2B11) TRBL” is illuminated, THEN TAKE appropriate
action per 1(2)POP09-AN-03M2, Annunciator Lampbox 1(2)-03M-2
Response Instructions.
- 7.1.14 RETURN switches to the “AS FOUND” positions per Addendum 1,
Control-Loop Alignment.

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7.2 Transfer of Train B Channel III Battery Chargers

CAUTION

- A Class 1E battery is **INOPERABLE** anytime it is **NOT** aligned to an operating battery charger.
- **IF** a Class 1E battery is realigned to an operating battery charger in less than or equal to **15 minutes AND only up to one battery cell is jumpered out**, **THEN** the Class 1E battery may be declared **OPERABLE** after verifying the operating battery charger normal float voltage is greater than or equal to 129.2 VDC. (Reference 2.20, 2.21, 2.22)
- **IF** a Class 1E battery is **NOT** realigned to an operating battery charger within **15 minutes OR more than one battery cell is jumpered out**, **THEN** Section 9.0, Class 1E Battery Operability Following a Discharge Transient, must be performed prior to declaring the battery operable. (Reference 2.18, 2.21, 2.22)

NOTE

- All switches and breakers required for the performance of Section 7.0 are located in Train B Channel III Distribution Room 213 {35 ft EAB}, unless otherwise specified.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

7.2.1 PERFORM Addendum 1, Control-Loop Alignment.

7.2.2 ENSURE the “FLOAT/EQUALIZE” toggle switch in the “FLOAT” position for both battery chargers.

E1B11(E2B11)-1

E1B11(E2B11)-2

“FLOAT/EQUALIZE”
Switch in “FLOAT” _____

“FLOAT/EQUALIZE”
Switch in “FLOAT” _____

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- 7.2.3 ENSURE CLOSED the 480V AC SUPPLY BREAKER for the battery charger being placed in service. {35 ft EAB, E1B(E2B) SWGR Rm}

E1B11(E2B11)-1

E1B11(E2B11)-2

“125V DC BATT CHGR
E1B11(E2B11)-1”
MCC E1B1(E2B1)/Q2R _____

“125V DC BATT CHGR
E1B11(E2B11)-2”
MCC E1B2(E2B2)/A6R _____

- 7.2.4 ENSURE CLOSED the “DC OUTPUT CB-2” breaker for the battery charger being placed in service.

E1B11(E2B11)-1

E1B11(E2B11)-2

“DC OUTPUT CB-2” _____

“DC OUTPUT CB-2” _____

NOTE

If “AC INPUT CB-1” breaker trips and no apparent cause for the trip is identified, the Shift/Unit Supervisor may direct the breaker to be re-closed one time. The battery charger SHALL be declared inoperable if the breaker trips a second time.

- 7.2.5 ENSURE CLOSED the “AC INPUT CB-1” breaker for the battery charger being placed in service.

E1B11(E2B11)-1

E1B11(E2B11)-2

“AC INPUT CB-1” _____

“AC INPUT CB-1” _____

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CAUTION

IF charger voltage increases to greater than 140 VDC, THEN the “AC INPUT CB-1” breaker for the battery charger **SHALL** be Opened IMMEDIATELY to prevent damage to system components. (Reference 2.16)

7.2.6 ADJUST float voltage for the battery charger being placed in service:

- 7.2.6.1 IF Section 7.2 was entered due to inservice battery charger voltage less than 126 VDC per Step 7.1.12.5, THEN GO TO Step 7.2.6.3
- 7.2.6.2 Between 129.2 and 131.8 VDC
- 7.2.6.3 IF paralleling chargers, THEN within -.2 and +.2 VDC of battery charger in service
- 7.2.6.4 IF charger voltage can **NOT** be adjusted to the float band of Steps 7.2.6.2 and 7.2.6.3 as applicable, THEN OPEN the following breakers AND NOTIFY the Unit/Shift Supervisor, OTHERWISE N/A.
- “AC INPUT CB-1”
 - “DC OUTPUT CB-2”

NOTE

Class 1E battery charger **SHALL** be paralleled for less than or equal to 15 minutes. (Reference 2.25)

7.2.7 ENSURE CLOSED the BATT CHGR TO 125V DC SWBD breaker for the battery charger being placed in service.

E1B11(E2B11)-1

“BATT CHGR E1B11(E2B11)-1
TO 125V DC SWBD E1B11(E2B11)”
E1B11(E2B11)/2A _____

E1B11(E2B11)-2

“BATT CHGR E1B11(E2B11)-2
TO 125V DC SWBD E1B11(E2B11)”
E1B11(E2B11)/3A _____

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- 7.2.8 IF paralleling chargers, THEN slowly REDUCE float voltage for the battery charger being removed from service until all load is transferred to the oncoming battery charger as indicated by 0.0 amps on charger amp meter. _____
- 7.2.9 VERIFY oncoming battery charger current less than 330 amps. _____
- 7.2.10 OPEN the “AC INPUT CB-1” breaker for the battery charger being removed from service.
- E1B11(E2B11)-1 E1B11(E2B11)-2
- “AC INPUT CB-1” _____ “AC INPUT CB-1” _____
- 7.2.11 OPEN the “DC OUTPUT CB-2” breaker for the battery charger being removed from service.
- E1B11(E2B11)-1 E1B11(E2B11)-2
- “DC OUTPUT CB-2” _____ “DC OUTPUT CB-2” _____
- 7.2.12 OPEN the BATT CHGR TO 125V DC SWBD breaker for the battery charger being removed from service.
- E1B11(E2B11)-1 E1B11(E2B11)-2
- “BATT CHGR E1B11(E2B11)-1 TO 125V DC SWBD E1B11(E2B11)” “BATT CHGR E1B11(E2B11)-2 TO 125V DC SWBD E1B11(E2B11)”
- E1B11(E2B11)/2A _____ E1B11(E2B11)/3A _____
- 7.2.13 IF float voltage was **NOT** adjusted in Step 7.2.6.2 due to inservice battery charger voltage less than 126 VDC, THEN ADJUST float voltage Between 129.2 and 131.8 VDC _____
- 7.2.14 IF Annunciator Lampbox 3M02-C-1 “125V DC SYSTEM E1B11(E2B11) TRBL” is illuminated, THEN TAKE appropriate action per 1(2)POP09-AN-03M2, Annunciator Lampbox 1(2)-03M-2 Response Instructions. _____
- 7.2.15 RETURN switches to the “AS FOUND” positions per Addendum 1, Control-Loop Alignment. _____

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7.3 Removing Train B Channel III E1B11(E2B11) from Service

NOTE

- All switches and breakers required for the performance of Section 7.0 are located in Train B Channel III Distribution Room 213 {35 ft EAB}, unless otherwise specified.
- Opening battery output breaker results in Standby DG being **INOPERABLE**, take appropriate actions per Technical Specifications 3.8.1.1, 3.8.1.2, 3.8.1.3, 3.8.2.1, 3.8.2.2, 3.8.3.1, 3.8.3.2, and TRM 3.8.2.2.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.
- Deenergizing Bus E1B11(E2B11) requires entry into Technical Specification 3.3.2, action c, Table 3.3-3, action 27 for Control Room Ventilation and actions 29 and 30 for FHB HVAC. (Reference 2.26)
 - Deenergizes DC DIST PNL PL039B
 - Deenergizes Train B Aux Relay Panel RR144B
 - Disables manual and automatic actuation signals for Train B CR HVAC
 - Disables manual and automatic actuation signals for Train B FHB HVAC

7.3.1 PERFORM Addendum 1, Control-Loop Alignment. _____

7.3.2 IF it is desired to disconnect the 125V DC BATT from the 125V DC SWBD, THEN OPEN the “125V BATT E1B11(E2B11) TO 125V DC SWBD E1B11(E2B11)” breaker. {SWBD E1B11(E2B11)/1B}. _____

7.3.3 OPEN the “AC INPUT CB-1” breaker for the battery charger being removed from service.

E1B11(E2B11)-1

E1B11(E2B11)-2

“AC INPUT CB-1” _____

“AC INPUT CB-1” _____

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7.3.4 OPEN the “DC OUTPUT CB-2” breaker for the battery charger being removed from service.

E1B11(E2B11)-1

E1B11(E2B11)-2

“DC OUTPUT CB-2” _____

“DC OUTPUT CB-2” _____

7.3.5 OPEN the BATT CHGR TO 125V DC SWBD breaker for the battery charger being removed service.

E1B11(E2B11)-1

E1B11(E2B11)-2

“BATT CHGR E1B11(E2B11)-1
TO 125V DC SWBD E1B11(E2B11)”
E1B11(E2B11)/2A _____

“BATT CHGR E1B11(E2B11)-2
TO 125V DC SWBD E1B11(E2B11)”
E1B11(E2B11)/3A _____

7.3.6 RETURN switches to the “AS FOUND” positions per Addendum 1, Control-Loop Alignment. _____

ESF (Class 1E) DC Distribution System

8.0 Train C Channel IV E1C11(E2C11) Operation**NOTE**

- All switches and breakers required for the performance of Section 8.0 are located in Train C Channel IV Distribution Room 319 {60 ft EAB}, unless otherwise specified.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

8.1 Placing Train C Channel IV E1C11(E2C11) in Service

8.1.1 PERFORM Addendum 1, Control-Loop Alignment. _____

8.1.2 ENSURE the “FLOAT/EQUALIZE” toggle switch in the “FLOAT” position for the battery charger being placed in service.

E1C11(E2C11)-1E1C11(E2C11)-2“FLOAT/EQUALIZE”
Switch in “FLOAT” _____“FLOAT/EQUALIZE”
Switch in “FLOAT” _____

8.1.3 ENSURE the 480V AC SUPPLY BREAKER closed for the battery charger being placed in service. {60 ft EAB, E1C(E2C) SWGR Rm}

E1C11(E2C11)-1E1C11(E2C11)-2“125V DC BATT CHGR
E1C11(E2C11)-1”
MCC E1C1(E2C1)/Q2R _____“125V DC BATT CHGR
E1C11(E2C11)-2”
MCC E1C2(E2C2)/H4L _____

8.1.4 ENSURE the “125V BATT E1C11(E2C11) TO 125V DC SWBD E1C11(E2C11)” breaker closed. {SWBD E1C11(E2C11)/1B} _____

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- 8.1.5 CLOSE the BATT CHGR TO 125V DC SWBD breaker for the battery charger being placed in service.

E1C11(E2C11)-1

E1C11(E2C11)-2

“BATT CHGR E1C11(E2C11)-1
TO 125V DC SWBD E1C11(E2C11)”
E1C11(E2C11)/2A _____

“BATT CHGR E1C11(E2C11)-2
TO 125V DC SWBD E1C11(E2C11)”
E1C11(E2C11)/3A _____

- 8.1.6 CLOSE the “DC OUTPUT CB-2” breaker for the battery charger being placed in service.

E1C11(E2C11)-1

E1C11(E2C11)-2

“DC OUTPUT CB-2” _____

“DC OUTPUT CB-2” _____

CAUTION

IF charger voltage increases to greater than 140 VDC, THEN the “AC INPUT CB-1” breaker for the battery charger SHALL be Opened IMMEDIATELY to prevent damage to system components. (Reference 2.16)

NOTE

If “AC INPUT CB-1” breaker trips and no apparent cause for the trip is identified, the Shift/Unit Supervisor may direct the breaker to be re-closed one time. The battery charger SHALL be declared inoperable if the breaker trips a second time.

- 8.1.7 CLOSE the “AC INPUT CB-1” breaker for the battery charger being placed in service.

E1C11(E2C11)-1

E1C11(E2C11)-2

“AC INPUT CB-1” _____

“AC INPUT CB-1” _____

- 8.1.8 VERIFY battery charger voltage between 126 and 135 VDC. IF battery charger voltage is NOT between 126 and 135 VDC, THEN NOTIFY the Shift Supervisor. _____

- 8.1.9 PERFORM Lineup 4, SWBD E1C11(E2C11) Channel IV Lineup. _____

- 8.1.10 VERIFY battery charger current less than 330 amps. _____

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- 8.1.11 VERIFY battery charger voltage between 129.2 and 131.8 VDC.
(Reference 2.10, 2.11, 2.13, and 2.19) _____
- 8.1.12 IF battery charger voltage is NOT between 129.2 and 131.8 VDC,
THEN PERFORM the following:
- 8.1.12.1 IF charger voltage exceeds 140 VDC, THEN
IMMEDIATELY OPEN the “AC INPUT CB-1”
breaker of the charger. _____
- a. NOTIFY the Shift Supervisor. _____
- b. GO TO Step 8.3 to complete shutdown of the
battery charger. _____
- 8.1.12.2 IF charger voltage exceeds 137.3 VDC, THEN NOTIFY
the Shift Supervisor AND GO TO Step 8.2 to transfer to
the other battery charger. _____
- 8.1.12.3 IF battery charger voltage exceeds 131.8 VDC, THEN
NOTIFY the Shift Supervisor AND ADJUST float
voltage between 129.2 and 131.8 VDC. _____
- 8.1.12.4 IF battery charger voltage is less than 129.2 VDC but
greater than or equal to 126 VDC, THEN NOTIFY the
Shift Supervisor AND ADJUST float voltage between
129.2 and 131.8 VDC. _____
- 8.1.12.5 IF battery charger voltage is less than 126 VDC, THEN
NOTIFY the Shift Supervisor AND GO TO Step 8.2 to
transfer to the other battery charger. _____
- 8.1.12.6 INITIATE appropriate corrective action. _____
- 8.1.13 IF Annunciator Lampbox 3M02-D-1 “125V DC SYSTEM
E1C11(E2C11) TRBL” is illuminated, THEN TAKE appropriate
action per 1(2)POP09-AN-03M2, Annunciator Lampbox 1(2)-03M-2
Response Instructions. _____
- 8.1.14 RETURN switches to the “AS FOUND” positions per Addendum 1,
Control-Loop Alignment. _____

ESF (Class 1E) DC Distribution System

8.2 Transfer of Train C Channel IV Battery Chargers

CAUTION

- A Class 1E battery is **INOPERABLE** anytime it is **NOT** aligned to an operating battery charger.
- **IF** a Class 1E battery is realigned to an operating battery charger in less than or equal to **15 minutes AND only up to one battery cell is jumpered out**, **THEN** the Class 1E battery may be declared **OPERABLE** after verifying the operating battery charger normal float voltage is greater than or equal to 129.2 VDC. (Reference 2.20, 2.21, 2.22)
- **IF** a Class 1E battery is **NOT** realigned to an operating battery charger within **15 minutes OR more than one battery cell is jumpered out**, **THEN** Section 9.0, Class 1E Battery Operability Following a Discharge Transient, must be performed prior to declaring the battery operable. (Reference 2.18, 2.21, 2.22)

NOTE

- All switches and breakers required for the performance of Section 8.0 are located in Train C Channel IV Distribution Room 319 {60 ft EAB}, unless otherwise specified.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

8.2.1 PERFORM Addendum 1, Control-Loop Alignment.

8.2.2 ENSURE the “FLOAT/EQUALIZE” toggle switch in the “FLOAT” position for both battery chargers.

E1C11(E2C11)-1

“FLOAT/EQUALIZE”
Switch in “FLOAT” _____

E1C11(E2C11)-2

“FLOAT/EQUALIZE”
Switch in “FLOAT” _____

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- 8.2.3 ENSURE CLOSED the 480V AC SUPPLY BREAKER for the battery charger being placed in service. {60 ft EAB, E1C(E2C) SWGR Rm}

E1C11(E2C11)-1

E1C11(E2C11)-2

“125V DC BATT CHGR
E1C11(E2C11)-1”
MCC E1C1(E2C1)/Q2R _____

“125V DC BATT CHGR
E1C11(E2C11)-2”
MCC E1C2(E2C2)/H4L _____

- 8.2.4 ENSURE CLOSED the “DC OUTPUT CB-2” breaker for the battery charger being placed in service.

E1C11(E2C11)-1

E1C11(E2C11)-2

“DC OUTPUT CB-2” _____

“DC OUTPUT CB-2” _____

NOTE

If “AC INPUT CB-1” breaker trips and no apparent cause for the trip is identified, the Shift/Unit Supervisor may direct the breaker to be re-closed one time. The battery charger SHALL be declared inoperable if the breaker trips a second time.

- 8.2.5 ENSURE CLOSED the “AC INPUT CB-1” breaker for the battery charger being placed in service.

E1C11(E2C11)-1

E1C11(E2C11)-2

“AC INPUT CB-1” _____

“AC INPUT CB-1” _____

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CAUTION

IF charger voltage increases to greater than 140 VDC, THEN the “AC INPUT CB-1” breaker for the battery charger **SHALL** be Opened IMMEDIATELY to prevent damage to system components. (Reference 2.16)

8.2.6 ADJUST float voltage for the battery charger being placed in service:

- 8.2.6.1 IF Section 8.2 was entered due to inservice battery charger voltage less than 126 VDC per Step 8.1.12.5, THEN GO TO Step 8.2.6.3
- 8.2.6.2 Between 129.2 and 131.8 VDC
- 8.2.6.3 IF paralleling chargers, THEN within -.2 and +.2 VDC of battery charger in service
- 8.2.6.4 IF charger voltage can **NOT** be adjusted to the float band of Steps 8.2.6.2 and 8.2.6.3 as applicable, THEN OPEN the following breakers AND NOTIFY the Unit/Shift Supervisor, OTHERWISE N/A.
- “AC INPUT CB-1”
 - “DC OUTPUT CB-2”

NOTE

Class 1E battery charger **SHALL** be paralleled for less than or equal to 15 minutes. (Reference 2.25)

8.2.7 ENSURE CLOSED the BATT CHGR TO 125V DC SWBD breaker for the battery charger being placed in service.

E1C11(E2C11)-1

“BATT CHGR E1C11(E2C11)-1
TO 125V DC SWBD E1C11(E2C11)”
E1C11(E2C11)/2A _____

E1C11(E2C11)-2

“BATT CHGR E1C11(E2C11)-2
TO 125V DC SWBD E1C11(E2C11)”
E1C11(E2C11)/3A _____

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- 8.2.8 IF paralleling chargers, THEN slowly REDUCE float voltage for the battery charger being removed from service until all load is transferred to the oncoming battery charger as indicated by 0.0 amps on charger amp meter. _____
- 8.2.9 VERIFY oncoming battery charger current less than 330 amps. _____
- 8.2.10 OPEN the “AC INPUT CB-1” breaker for the battery charger being removed from service.
- E1C11(E2C11)-1 E1C11(E2C11)-2
- “AC INPUT CB-1” _____ “AC INPUT CB-1” _____
- 8.2.11 OPEN the “DC OUTPUT CB-2” breaker for the battery charger being removed from service.
- E1C11(E2C11)-1 E1C11(E2C11)-2
- “DC OUTPUT CB-2” _____ “DC OUTPUT CB-2” _____
- 8.2.12 OPEN the BATT CHGR TO 125V DC SWBD breaker for the battery charger being removed from service.
- E1C11(E2C11)-1 E1C11(E2C11)-2
- “BATT CHGR E1C11(E2C11)-1 TO 125V DC SWBD E1C11(E2C11)” “BATT CHGR E1C11(E2C11)-2 TO 125V DC SWBD E1C11(E2C11)”
- E1C11(E2C11)/2A _____ E1C11(E2C11)/3A _____
- 8.2.13 IF float voltage was **NOT** adjusted in Step 8.2.6.2 due to inservice battery charger voltage less than 126 VDC, THEN ADJUST float voltage Between 129.2 and 131.8 VDC _____
- 8.2.14 IF Annunciator Lampbox 3M02-D-1 “125V DC SYSTEM E1C11(E2C11) TRBL” is illuminated, THEN TAKE appropriate action per 1(2)POP09-AN-03M2, Annunciator Lampbox 1(2)-03M-2 Response Instructions. _____
- 8.2.15 RETURN switches to the “AS FOUND” positions per Addendum 1, Control-Loop Alignment. _____

ESF (Class 1E) DC Distribution System

8.3 Removing Train C Channel IV E1C11(E2C11) from Service

NOTE

- All switches and breakers required for the performance of Section 8.0 are located in Train C Channel IV Distribution Room 319 {60 ft EAB}, unless otherwise specified.
- Opening battery output breaker results in Standby DG being **INOPERABLE**, take appropriate actions per Technical Specifications 3.8.1.1, 3.8.1.2, 3.8.1.3, 3.8.2.1, 3.8.2.2, 3.8.3.1, 3.8.3.2, and TRM 3.8.2.2.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.
- Deenergizing Bus E1C11(E2C11) requires entry into Technical Specification 3.3.2, action c, Table 3.3-3, action 27 for Control Room Ventilation and actions 29 and 30 for FHB HVAC. (Reference 2.26)
 - Deenergizes DC DIST PNL PL039C
 - Deenergizes Train C Aux Relay Panel RR145C
 - Disables manual and automatic actuation signals for Train C CR HVAC
 - Disables manual and automatic actuation signals for Train C FHB HVAC

8.3.1 **PERFORM** Addendum 1, Control-Loop Alignment. _____

8.3.2 **IF** it is desired to disconnect the 125V DC BATT from the 125V DC SWBD, **THEN OPEN** the “125V BATT E1C11(E2C11) TO 125V DC SWBD E1C11(E2C11)” breaker. _____
 {SWBD E1C11(E2C11)/1B}

8.3.3 **OPEN** the “AC INPUT CB-1” breaker for the battery charger being removed from service.

E1C11(E2C11)-1

E1C11(E2C11)-2

“AC INPUT CB-1” _____

“AC INPUT CB-1” _____

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8.3.4 OPEN the “DC OUTPUT CB-2” breaker for the battery charger being removed from service.

E1C11(E2C11)-1

E1C11(E2C11)-2

“DC OUTPUT CB-2” _____

“DC OUTPUT CB-2” _____

8.3.5 OPEN the BATT CHGR TO 125V DC SWBD breaker for the battery charger being removed service.

E1C11(E2C11)-1

E1C11(E2C11)-2

“BATT CHGR E1C11(E2C11)-1
TO 125V DC SWBD E1C11(E2C11)”
E1C11(E2C11)/2A _____

“BATT CHGR E1C11(E2C11)-2
TO 125V DC SWBD E1C11(E2C11)”
E1C11(E2C11)/3A _____

8.3.6 RETURN switches to the “AS FOUND” positions per Addendum 1, Control-Loop Alignment. _____

ESF (Class 1E) DC Distribution System

9.0 Class 1E Battery Operability Following a Discharge Transient

9.1 ENSURE a battery charger for the applicable battery is in service.

E1A11(E2A11)-1/2 _____ E1B11(E2B11)-1/2 _____

E1C11(E2C11)-1/2 _____ E1D11(E2D11)-1/2 _____

NOTE

Step 9.2 should not be confused with performing an Equalize Charge PM. In this instance, the higher voltage setting is being used to reduce recharge time.

9.2 IF the discharge exceeded 1 hour, THEN PLACE the applicable charger's "FLOAT/EQUALIZE" toggle switch in the "EQUALIZE" position.E1A11(E2A11)-1/2E1B11(E2B11)-1/2"FLOAT/EQUALIZE"
Switch in "EQUALIZE" _____"FLOAT/EQUALIZE"
Switch in "EQUALIZE" _____E1C11(E2C11)-1/2E1D11(E2D11)-1/2"FLOAT/EQUALIZE"
Switch in "EQUALIZE" _____"FLOAT/EQUALIZE"
Switch in "EQUALIZE" _____

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9.3 WHEN the charge current has dropped to less than 20 amps, as measured by ERFDADS/ICS, THEN PLACE the applicable charger's "FLOAT/EQUALIZE" toggle switch in the "FLOAT" position. _____

- ERFDADS/ICS pt. DJIA0060 - 125VDC E1A11 BATT AMPS
- ERFDADS/ICS pt. DJIA0063 - 125VDC E1B11 BATT AMPS
- ERFDADS/ICS pt. DJIA0066 - 125VDC E1C11 BATT AMPS
- ERFDADS/ICS pt. DJIA0069 - 125VDC E1D11 BATT AMPS

E1A11(E2A11)-1/2

"FLOAT/EQUALIZE"

Switch in "FLOAT" _____

E1B11(E2B11)-1/2

"FLOAT/EQUALIZE"

Switch in "FLOAT" _____

E1C11(E2C11)-1/2

"FLOAT/EQUALIZE"

Switch in "FLOAT" _____

E1D11(E2D11)-1/2

"FLOAT/EQUALIZE"

Switch in "FLOAT" _____

9.4 WHEN the charge current (with the charger set for **FLOAT** operation), as measured by M&TE (clamp on amp meter) at the battery lead (preferred) or ERFDADS/ICS is less than 2 amps, THEN NOTIFY Electrical Maintenance to perform 0PSP06-DJ-0001, 125 Volt Class 1E Battery 7 Day Surveillance Test. _____

9.5 IF 0PSP06-DJ-0001, 125 Volt Class 1E Battery 7 Day Surveillance Test was completed satisfactorily, THEN DECLARE the applicable battery **OPERABLE**. _____

9.6 IF battery voltage decreased to less than 110 volts during the discharge, THEN NOTIFY Electrical Maintenance to perform 0PSP06-DJ-0002, 125 Volt Class 1E Battery Quarterly Surveillance Test, per Technical Specifications 4.8.2.1. _____

- Battery Voltage as read locally on the Main Bus Voltmeter
- Battery Voltage as read at 1E DC SYS 125 VOLT BUS Voltage (CP003)
- ERFDADS/ICS pt. DJEA0004 - 125VDC BUS E1A11 CH I VOLTS
- ERFDADS/ICS pt. DJEA0003 - 125VDC BUS E1B11 CH III VOLTS
- ERFDADS/ICS pt. DJEA0002 - 125VDC BUS E1C11 CH IV VOLTS
- ERFDADS/ICS pt. DJEA0001 - 125VDC BUS E1D11 CH II VOLTS

ESF (Class 1E) DC Distribution System**10.0 Support Documents**

- 10.1 Addendum 1, Control-Loop Alignment
- 10.2 Lineup 1, SWBD E1A11(E2A11) Channel I Lineup
- 10.3 Lineup 2, SWBD E1D11(E2D11) Channel II Lineup
- 10.4 Lineup 3, SWBD E1B11(E2B11) Channel III Lineup
- 10.5 Lineup 4, SWBD E1C11(E2C11) Channel IV Lineup

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NOTE

Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23). Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

1. CIRCLE “AS FOUND” switch positions. _____

2. REMOVE potentially failed “SG LVL” by selecting alternate channel: _____

Potentially Failed Instrument Channel/Power Supply				
	I (DP1201)	II (DP1202)	III (DP1203)	IV (DP1204)
SG A	LT-571	LT-519		
SG B	LT-572	LT-529		
SG C	LT-573	LT-539		
SG D	LT-574	LT-549		

3. REMOVE potentially failed “FW FLOW” by selecting alternate channel: _____

Potentially Failed Instrument Channel/Power Supply				
	I (DP1201)	II (DP1202)	III (DP1203)	IV (DP1204)
SG A	FT -510	FT -511		
SG B	FT -520	FT -521		
SG C	FT -530	FT -531		
SG D	FT -540	FT -541		

4. REMOVE potentially failed “STM FLOW” by selecting alternate channel: _____

Potentially Failed Instrument Channel/Power Supply				
	I (DP1201)	II (DP1202)	III (DP1203)	IV (DP1204)
SG A	FT -512	FT -513		
SG B	FT -522	FT -523		
SG C	FT -532	FT -533		
SG D	FT -542	FT -543		

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Addendum 1	Control-Loop Alignment		Page 2 of 2

5. REMOVE potentially failed “PRZR PRESS CONT SEL” by selecting alternate: _____

Position	Potentially Failed Instrument Channel/Power Supply			
	I (DP1201)	II (DP1202)	III (DP1203)	IV (DP1204)
P457/456		P456	P457	
P455/456	P455	P456		
P455/458	P455			P458
alternate	P457/456	P455/458	P455/456	P455/456

6. REMOVE potentially failed “PRZR LEVEL CONT SEL” by selecting alternate: _____

Position	Potentially Failed Instrument Channel/Power Supply			
	I (DP1201)	II (DP1202)	III (DP1203)	IV (DP1204)
L467/466		L466	L467	
L465/466	L465	L466		
L465/467	L465		L467	
alternate	L467/466	L465/467	L465/466	N/A

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Lineup 1	SWBD E1A11(E2A11) Channel I Lineup		Page 1 of 3

Unit 1

(Circle Unit Performing Lineup)

Unit 2

EXCEPTIONS

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	REMARKS

Personnel participating
in device manipulation:

_____	_____
Name	Initials
_____	_____
_____	_____
_____	_____

Device lineup completed by:

_____	_____	_____
Operator	Date	Time

Lineup 1 Reviewed:

_____	_____
Unit Supervisor	Date

This lineup, when completed, SHALL be retained for five years.

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Lineup 1	SWBD E1A11(E2A11) Channel I Lineup		
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DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
E1A1(E2A1)/Q1R	125V DC BATT CHGR E1A11(E2A11)-1	EAB 10' E1A(E2A) SWGR Rm	ON			
E1A2(E2A2)/A2L	125V DC BATT CHGR E1A11(E2A11)-2	EAB 10' E1A(E2A) SWGR Rm	ON			
E1A11(E2A11)/1B	125V BATT E1A11(E2A11) TO 125V DC SWBD E1A11(E2A11)	EAB 10' SWBD E1A11(E2A11)	CLOSED			
E1A11(E2A11)/2A	BATT CHGR E1A11(E2A11)-2 TO 125V DC SWBD E1A11(E2A11)	EAB 10' SWBD E1A11(E2A11)	(1) ON / OFF			
NONE	BATT CHGR E1A11(E2A11)-2 "AC INPUT CB-1"	EAB 10' BATT CHGR E1A11(E2A11)-2	(1) ON / OFF			
NONE	BATT CHGR E1A11(E2A11)-2 "DC OUTPUT CB-2"	EAB 10' BATT CHGR E1A11(E2A11)-2	(1) ON / OFF			
E1A11(E2A11)/3A	BATT CHGR E1A11(E2A11)-1 TO 125V DC SWBD E1A11(E2A11)	EAB 10' SWBD E1A11(E2A11)	(2) ON / OFF			
NONE	BATT CHGR E1A11(E2A11)-1 "AC INPUT CB-1"	EAB 10' BATT CHGR E1A11(E2A11)-1	(2) ON / OFF			
NONE	BATT CHGR E1A11(E2A11)-1 "DC OUTPUT CB-2"	EAB 10' BATT CHGR E1A11(E2A11)-1	(2) ON / OFF			
E1A11(E2A11)/2B	SPARE FOR BATT TEST EQUIP	EAB 10' SWBD E1A11(E2A11)	OFF			
E1A11(E2A11)/3B	TO 125V DC DIST PNL PL039A EAB 10' EL	EAB 10' SWBD E1A11(E2A11)	ON			
E1A11(E2A11)/3C	STBY DIESEL GEN 11(21) CONT PNL ZLP101	EAB 10' SWBD E1A11(E2A11)	ON			
E1A11(E2A11)/4A	TRAIN A RX TRIP SWGR CONTROL PWR	EAB 10' SWBD E1A11(E2A11)	ON			
E1A11(E2A11)/4B	TO 125V DC DIST PNL PL139A STBY D/G 11(21) RM 35' EL	EAB 10' SWBD E1A11(E2A11)	ON			

(1) IF Battery Charger E1A11(E2A11)-2 is in service, THEN breaker SHALL be ON, OTHERWISE breaker shall be OFF. (circle position)

(2) IF Battery Charger E1A11(E2A11)-1 is in service, THEN breaker SHALL be ON, OTHERWISE breaker shall be OFF. (circle position)

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ESF (Class 1E) DC Distribution System			
Lineup 1			
SWBD E1A11(E2A11) Channel I Lineup			Page 3 of 3

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
E1A11(E2A11)/4D	4.16KV BUS E1A(E2A) DC CONTROL PWR	EAB 10' SWBD E1A11(E2A11)	ON			
E1A11(E2A11)/5B	480V ESF LC E1A(E2A) DC CONTROL PWR	EAB 10' SWBD E1A11(E2A11)	ON			
E1A11(E2A11)/5C	ESF LOAD SEQUENCER CABINET A-ZLP801	EAB 10' SWBD E1A11(E2A11)	ON			
E1A11(E2A11)/5D	CH 1 INST/CONT PWR TMI INVERTER DC PWR	EAB 10' SWBD E1A11(E2A11)	ON			
E1A11(E2A11)/5E	CH 1 INST/CONT PWR NSSS INVERTER DC PWR	EAB 10' SWBD E1A11(E2A11)	ON			
E1A11(E2A11)/7B	B/U BKR-PRZR PORV 0655A 1(2)-RC-PCV-0655A	EAB 10' SWBD E1A11(E2A11)	ON			
E1A11(E2A11)/7C	PRZR PORV 0655A 1(2)-RC-PCV-0655A	EAB 10' SWBD E1A11(E2A11)	ON			

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ESF (Class 1E) DC Distribution System			
Lineup 2	SWBD E1D11(E2D11) Channel II Lineup		Page 1 of 3

Unit 1

(Circle Unit Performing Lineup)

Unit 2

EXCEPTIONS

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	REMARKS

Personnel participating
in device manipulation:

_____	_____
Name	Initials
_____	_____
_____	_____
_____	_____

Device lineup completed by:

_____	_____	_____
Operator	Date	Time

Lineup 2 Reviewed:

_____	_____
Unit Supervisor	Date

This lineup, when completed, SHALL be retained for five years.

OPOP02-EE-0001		Rev. 16	Page 53 of 60
ESF (Class 1E) DC Distribution System			
Lineup 2		SWBD E1D11(E2D11) Channel II Lineup	
		Page 2 of 3	

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
E1A4(E2A4)/F3L	125V DC BATT CHGR E1D11(E2D11)-1	EAB 10' E1A(E2A) SWGR Rm	ON			
E1A1(E2A1)/T3R	125V DC BATT CHGR E1D11(E2D11)-2	EAB 10' E1A(E2A) SWGR Rm	ON			
E1D11(E2D11)/1B	125V BATT E1D11(E2D11) TO 125V DC SWBD E1D11(E2D11)	EAB 10' SWBD E1D11(E2D11)	CLOSED			
E1D11(E2D11)/2A	BATT CHGR E1D11(E2D11)-1 TO 125V DC SWBD E1D11(E2D11)	EAB 10' SWBD E1D11(E2D11)	(1) ON / OFF			
NONE	BATT CHGR E1D11(E2D11)-1 "AC INPUT CB-1"	EAB 10' BATT CHGR E1D11(E2D11)-1	(1) ON / OFF			
NONE	BATT CHGR E1D11(E2D11)-1 "DC OUTPUT CB-2"	EAB 10' BATT CHGR E1D11(E2D11)-1	(1) ON / OFF			
E1D11(E2D11)/3A	BATT CHGR E1D11(E2D11)-2 TO 125V DC SWBD E1D11(E2D11)	EAB 10' SWBD E1D11(E2D11)	(2) ON / OFF			
NONE	BATT CHGR E1D11(E2D11)-2 "AC INPUT CB-1"	EAB 10' BATT CHGR E1D11(E2D11)-2	(2) ON / OFF			
NONE	BATT CHGR E1D11(E2D11)-2 "DC OUTPUT CB-2"	EAB 10' BATT CHGR E1D11(E2D11)-2	(2) ON / OFF			
E1D11(E2D11)/2B	SPARE FOR BATTERY TEST EQUIP	EAB 10' SWBD E1D11(E2D11)	OFF			
E1D11(E2D11)/3B	CH II INST/CONT PWR NSSS INVERTER DC PWR	EAB 10' SWBD E1D11(E2D11)	ON			
E1D11(E2D11)/4C	AFW PUMP 14(24) TURB T AND T VLV 1(2)-AF-MOV-0514	EAB 10' SWBD E1D11(E2D11)	ON			
E1D11(E2D11)/5C	AFW PMP 14(24) TURB MAIN STM INLET VLV 1(2)-AF-MOV-0143	EAB 10' SWBD E1D11(E2D11)	ON			

(1) IF Battery Charger E1D11(E2D11)-1 is in service, THEN breaker SHALL be ON, OTHERWISE breaker shall be OFF. (circle position)

(2) IF Battery Charger E1D11(E2D11)-2 is in service, THEN breaker SHALL be ON, OTHERWISE breaker shall be OFF. (circle position)

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ESF (Class 1E) DC Distribution System			
Lineup 2			
SWBD E1D11(E2D11) Channel II Lineup			Page 3 of 3

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
E1D11(E2D11)/6A	TO 125V DC DIST PNL PL040A EAB 10' EL	EAB 10' SWBD E1D11(E2D11)	ON			
E1D11(E2D11)/6B	SG1D(SG2D) AFW OCIV 1(2)-AF-MOV-0019	EAB 10' SWBD E1D11(E2D11)	ON			
E1D11(E2D11)/7C	SG1D(SG2D) AFW REG VLV 1(2)-AF-FV-7526	EAB 10' SWBD E1D11(E2D11)	ON			

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ESF (Class 1E) DC Distribution System			
Lineup 3	SWBD E1B11(E2B11) Channel III Lineup		Page 1 of 3

Unit 1

(Circle Unit Performing Lineup)

Unit 2

EXCEPTIONS

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	REMARKS

Personnel participating
in device manipulation:

_____	_____
Name	Initials
_____	_____
_____	_____
_____	_____

Device lineup completed by:

_____	_____	_____
Operator	Date	Time

Lineup 3 Reviewed:

_____	_____
Unit Supervisor	Date

This lineup, when completed, SHALL be retained for five years.

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ESF (Class 1E) DC Distribution System			
Lineup 3	SWBD E1B11(E2B11) Channel III Lineup		
			Page 2 of 3

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
E1B1(E2B1)/Q2R	125V DC BATT CHGR E1B11(E2B11)-1	EAB 35' E1B(E2B) SWGR Rm	ON			
E1B2(E2B2)/A6R	125V DC BATT CHGR E1B11(E2B11)-2	EAB 35' E1B(E2B) SWGR Rm	ON			
E1B11(E2B11)/1B	125V BATT E1B11(E2B11) TO 125V DC SWBD E1B11(E2B11)	EAB 35' SWBD E1B11(E2B11)	CLOSED			
E1B11(E2B11)/2A	BATT CHGR E1B11(E2B11)-1 TO 125V DC SWBD E1B11(E2B11)	EAB 35' SWBD E1B11(E2B11)	(1) ON / OFF			
NONE	BATT CHGR E1B11(E2B11)-1 "AC INPUT CB-1"	EAB 35' BATT CHGR E1B11(E2B11)-1	(1) ON / OFF			
NONE	BATT CHGR E1B11(E2B11)-1 "DC OUTPUT CB-2"	EAB 35' BATT CHGR E1B11(E2B11)-1	(1) ON / OFF			
E1B11(E2B11)/3A	BATT CHGR E1B11(E2B11)-2 TO 125V DC SWBD E1B11(E2B11)	EAB 35' SWBD E1B11(E2B11)	(2) ON / OFF			
NONE	BATT CHGR E1B11(E2B11)-2 "AC INPUT CB-1"	EAB 35' BATT CHGR E1B11(E2B11)-2	(2) ON / OFF			
NONE	BATT CHGR E1B11(E2B11)-2 "DC OUTPUT CB-2"	EAB 35' BATT CHGR E1B11(E2B11)-2	(2) ON / OFF			
E1B11(E2B11)/2B	SPARE FOR BATT TEST EQUIP	EAB 35' SWBD E1B11(E2B11)	OFF			
E1B11(E2B11)/3B	TO 125V DC DIST PNL PL039B EAB 35' EL	EAB 35' SWBD E1B11(E2B11)	ON			
E1B11(E2B11)/3C	STBY DIESEL GEN 12(22) CONT PNL ZLP103	EAB 35' SWBD E1B11(E2B11)	ON			
E1B11(E2B11)/4B	480V ESF LC E1B(E2B) DC CONT PWR	EAB 35' SWBD E1B11(E2B11)	ON			
E1B11(E2B11)/4C	TO 125V DC DIST PNL PL 139B STBY DG 12(22) RM 35' EL	EAB 35' SWBD E1B11(E2B11)	ON			
E1B11(E2B11)/4D	4.16KV BUS E1B(E2B) DC CONTROL PWR	EAB 35' SWBD E1B11(E2B11)	ON			

(1) IF Battery Charger E1B11(E2B11)-1 is in service, THEN breaker SHALL be ON, OTHERWISE breaker shall be OFF. (circle position)

(2) IF Battery Charger E1B11(E2B11)-2 is in service, THEN breaker SHALL be ON, OTHERWISE breaker shall be OFF. (circle position)

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ESF (Class 1E) DC Distribution System			
Lineup 3		SWBD E1B11(E2B11) Channel III Lineup	
		Page 3 of 3	

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
E1B11(E2B11)/5B	ESF LOAD SEQUENCER CABINET B-ZLP802	EAB 35' SWBD E1B11(E2B11)	ON			
E1B11(E2B11)/5C	TRAIN B RX TRIP SWGR CONTROL PWR	EAB 35' SWBD E1B11(E2B11)	ON			
E1B11(E2B11)/5D	CH III INST/CONT PWR NSSS INVERTER DC PWR	EAB 35' SWBD E1B11(E2B11)	ON			
E1B11(E2B11)/7B	B/U BKR-PRZR PORV 0656A 1(2)-RC-PCV-0656A	EAB 35' SWBD E1B11(E2B11)	ON			
E1B11(E2B11)/7C	PRZR PORV 0656A 1(2)-RC-PCV-0656A	EAB 35' SWBD E1B11(E2B11)	ON			

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ESF (Class 1E) DC Distribution System			
Lineup 4	SWBD E1C11(E2C11) Channel IV Lineup		Page 1 of 3

Unit 1

(Circle Unit Performing Lineup)

Unit 2

EXCEPTIONS

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	REMARKS

Personnel participating
in device manipulation:

_____	_____
Name	Initials
_____	_____
_____	_____
_____	_____

Device lineup completed by:

_____	_____	_____
Operator	Date	Time

Lineup 4 Reviewed:

_____	_____
Unit Supervisor	Date

This lineup, when completed, SHALL be retained for five years.

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ESF (Class 1E) DC Distribution System			
Lineup 4	SWBD E1C11(E2C11) Channel IV Lineup		
			Page 2 of 3

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
E1C1(E2C1)/Q2R	125V DC BATT CHGR E1C11(E2C11)-1	EAB 60' E1C(E2C) SWGR Rm	ON			
E1C2(E2C2)/H4L	125V DC BATT CHGR E1C11(E2C11)-2	EAB 60' E1C(E2C) SWGR Rm	ON			
E1C11(E2C11)/1B	125V BATT E1C11(E2C11) TO 125V DC SWBD E1C11(E2C11)	EAB 60' SWBD E1C11(E2C11)	CLOSED			
E1C11(E2C11)/2A	BATT CHGR E1C11(E2C11)-1 TO 125V DC SWBD E1C11(E2C11)	EAB 60' SWBD E1C11(E2C11)	(1) ON / OFF			
NONE	BATT CHGR E1C11(E2C11)-1 "AC INPUT CB-1"	EAB 60' BATT CHGR E1C11(E2C11)-1	(1) ON / OFF			
NONE	BATT CHGR E1C11(E2C11)-1 "DC OUTPUT CB-2"	EAB 60' BATT CHGR E1C11(E2C11)-1	(1) ON / OFF			
E1C11(E2C11)/3A	BATT CHGR E1C11(E2C11)-2 TO 125V DC SWBD E1C11(E2C11)	EAB 60' SWBD E1C11(E2C11)	(2) ON / OFF			
NONE	BATT CHGR E1C11(E2C11)-2 "AC INPUT CB-1"	EAB 60' BATT CHGR E1C11(E2C11)-2	(2) ON / OFF			
NONE	BATT CHGR E1C11(E2C11)-2 "DC OUTPUT CB-2"	EAB 60' BATT CHGR E1C11(E2C11)-2	(2) ON / OFF			
E1C11(E2C11)/2B	SPARE FOR BATT TEST EQUIP STBY DIESEL GEN 13(23)	EAB 60' SWBD E1C11(E2C11)	OFF			
E1C11(E2C11)/3B	CONT PNL ZLP105	EAB 60' SWBD E1C11(E2C11)	ON			
E1C11(E2C11)/3C	4.16KV BUS E1C(E2C) DC CONTROL PWR	EAB 60' SWBD E1C11(E2C11)	ON			
E1C11(E2C11)/4B	TO 125V DC DIST PNL PL 139C STBY D/G 13(23) RM 35' EL	EAB 60' SWBD E1C11(E2C11)	ON			
E1C11(E2C11)/4C	480V ESF LC E1C(E2C) DC CONTROL PWR	EAB 60' SWBD E1C11(E2C11)	ON			

(1) IF Battery Charger E1C11(E2C11)-1 is in service, THEN breaker SHALL be ON, OTHERWISE breaker shall be OFF. (circle position)

(2) IF Battery Charger E1C11(E2C11)-2 is in service, THEN breaker SHALL be ON, OTHERWISE breaker shall be OFF. (circle position)

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ESF (Class 1E) DC Distribution System			
Lineup 4			
SWBD E1C11(E2C11) Channel IV Lineup			Page 3 of 3

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
E1C11(E2C11)/4D	TO 125V DC DIST PNL PL039C EAB 60' EL	SWBD E1C11(E2C11) EAB 60'	ON			
E1C11(E2C11)/5D	CH IV INST/CONT PWR TMI INVERTER DC PWR	SWBD E1C11(E2C11) EAB 60'	ON			
E1C11(E2C11)/5E	CH IV INST/CONT PWR NSSS INVERTER DC PWR	SWBD E1C11(E2C11) EAB 60'	ON			
E1C11(E2C11)/7B	ESF LOAD SEQUENCER CABINET C-ZLP803	SWBD E1C11(E2C11) EAB 60'	ON			

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: **LOCALLY OPERATE ‘C’ SG PORV**

JPM NO.: **P3**

REVISION: **1**

LOCATION: **UNIT 1 or 2**

**JOB PERFORMANCE MEASURE WORKSHEET
SOUTH TEXAS PROJECT**

JPM Title: LOCALLY OPERATE 'C' SG PORV

JPM No.: P3

Rev. No: 1

STP Task: CRO82044, Respond to a Loss of All AC Power Condition

STP Objective: CRO82044, Respond to a Loss of All AC Power Condition in accordance with 0POP05-EO-EC00

Related K/A Reference: G.2.1.20 [4.3, 4.2] Ability to execute procedure steps.

References: 0POP05-EO-EC00, Rev. 18, LOSS OF ALL AC POWER, Addendum 6

Task Normally Completed By: PO

Method of Testing: Simulated

Location of Testing: Plant

Time Critical Task: NO

Alternate Path JPM: NO

Validation Time: 15 minutes

Required Materials (Tools/Equipment):

- Working copy of 0POP05-EO-EC00, Loss of All AC Power, Addendum 6.

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A Loss of All AC Power has occurred. The SG PORVs must be locally controlled to establish and maintain a cooldown.

INITIATING CUE:

The Unit Supervisor directs you to locally operate 1C(2C) SG PORV according with OPOP05-EO-EC00, LOSS OF ALL AC POWER, Addendum 6.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

The operator demonstrates how to locally operate 1C(2C) SG PORV.

HANDOUTS:

Working copy of OPOP05-EO-EC00, Loss of All AC Power, Addendum 6.

NOTES:

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

SAT/UNSAT Performance Step: 1

Start time: _____

Obtain the procedure.

Standard:

The operator obtains a copy of Addendum 6 of 0POP05-EO-EC00.

Comment:

Provide the operator with a copy of Addendum 6 of 0POP05-EO-EC00.

Cue:

Notes:

SAT/UNSAT Performance Step: 2

DEENERGIZE power to SG 1C(2C) PORV servo amplifier.

Standard:

The operator locates and SIMULATES opening the power supply for "SG 1C(2C) PORV SERVO AMP PY-7431".

*120 VAC **DP1204-17** (60 ft EAB RM 319)*

Comment:

The Operator should **NOT** open the breaker panel door.

Cue:

Breaker is "ON" initially; then "OFF" as simulated.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 3

ESTABLISH Communication with the Control Room.

Standard:

The operator establishes continuous communication with the Control Room by use of a radio or sound powered head phones.

Comment:

Cue:

- 1) Communications are established.
- 2) The Unit Supervisor directs you to open the PORV to 50%.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4 (C)

Open the PORV to the desired initial opening.

Standard:

The operator opens the PORV to between 40% and 50% by:

_____ *Turning PV 7431 manual override knobs on solenoid "A" and "B" simultaneously in the CLOSE direction (clockwise).*

_____ *WHEN the desired PORV position is reached, THEN TURN knob of "A" solenoid to the full OPEN position (counterclockwise).*

Comment:

PV-7431 is located in RM 501 of 58 ft IVC:

- Solenoid "A" - West
- Solenoid "B" - East

Cue:

1) PORV is closed initially; Give increasing PORV position.

(To be given after the PORV is opened to desired opening)

2) The control room orders the PORV to be shut.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 5 (C)

Close the PORV.

Standard:

The operator closes the PORV by:

_____ *Turning the manual override knob for solenoid "B" in the OPEN direction (counterclockwise).*

_____ *WHEN desired position of PORV is reached THEN TURN knob of "B" solenoid to the full CLOSE position (clockwise).*

Comment:

Cue:

Give decreasing PORV position as the PORV is closed.

Notes:

- TERMINATE THE JPM -

Stop time:_____

VERIFICATION OF COMPLETION

Job Performance Measure: LOCALLY OPERATE "C" SG PORV

Performers Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature _____

Date _____

JPM - STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A Loss of All AC Power has occurred. The SG PORVs must be locally controlled to establish and maintain a cooldown.

INITIATING CUE:

The Unit Supervisor directs you to locally operate 1C(2C) SG PORV according with OPOP05-EO-EC00, LOSS OF ALL AC POWER, Addendum 6.

INITIAL LICENSE EXAM

NRC OPERATING TEST # 1

SCENARIO # 1

Revision # 1

Week of 11/5/2007

SCENARIO OUTLINE

Facility: STP		NRC Exam Scenario No.: 1		Op-Test No.: 1	
Source: New <u> X </u> Bank - Significantly Modified <u> </u> Bank - Initial Condition Change <u> </u>					
Initial Conditions: 30% power, BOL, RCS boron at 1664 ppmB.					
Turnover: Performing a plant startup following a maintenance outage. Maintain current power until CWP #14 has been started. AFWP #11 OOS for maintenance.					
Event No.	Malf. No.	Event Type*	Event Description		
1	NA	BOP (N) SRO (N)	Start Circulating Water Pump (CWP) #14		
2 (7 min)	02-20-01 (1.0)	RO (I) SRO (I)	PZR level controlling channel LT-465 fails high - after #14 CWP started – integral to scenario (actuated from Green light on #14 CWP discharge valve going out indicating the valve is full open).		
3 (25 min)	05-22-01 (0)	BOP (I) SRO (I)	1A Steam Generator controlling pressure channel (PT-0514) fails low – after TS consulted for PZR level channel failure or 12 minutes		
4 (40 min)	05-03-02 (0.1)	ALL (M)	1B Steam Generator Tube Leak/Rupture (5 min. ramp) – after TS consulted for Steam Pressure Channel failure or after 14 minutes		
5 (N/A)	01-12-02 (True)	RO (C) BOP (C) SRO (C)	ATWS (failure of auto and manual reactor trip) becomes apparent when Reactor trip required on SGTR.		
6 (N/A)	05-16-01 (True)	BOP (C) SRO (C)	Steam Dump Valves fail to open during cooldown for SGTR - integral to scenario, will occur when Steam Pressure mode is selected		
7 (~60 min)	01-35-02 (True)	RO (C) SRO (C)	Intermediate Range Channel N36 failure of compensating voltage - integral to scenario, will be apparent approx. 15 minutes after reactor trip		

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

SCENARIO MISCELLANEOUS INFORMATION**INSTRUCTOR NOTES:**

Refer to the Instructor Guide for directions on Simulator Setup, Expected Booth Communications and Expected Booth Actions.

CRITICAL PARAMETERS:

The following parameters may be of value in evaluating crew performance and should be automatically recorded during the scenario. Once the scenario is complete for each crew, printout the Critical Parameters and label the printout with date, time, Crew # and scenario #.

- Reactor Power (NI-41)
- 'A' SG NR level
- Charging Flow (FI-205A)
- RCS Loop 'A' T-Cold
- SG 'B' Pressure
- SG 'B' WR Level
- Source Range Level (NI-31)

OPERATOR ACTIONS TABLE NOTES:

1. Critical Tasks are indicated by "C" in the position column and indicated in bold type.
2. Actions required throughout the event are indicated as "(continuous)" in the position column.
3. Shaded cells indicate procedural entry points.

OPERATOR ACTIONS**Op-Test No.: 1 Scenario No.: 1 Event No.: 1****Event Description: Start CWP # 14**

Time	Position	Applicant's Actions or Behavior	Notes
	SRO	Directs BOP to start CWP # 14 per 0POP02-CW-0001, Circulating Water System Pump Operation.	
	BOP	Verifies blue PERM SATISFIED light for CWP # 14 has been lit for at least 2 minutes.	
	BOP	Ensure Vacuum Breaker Isolation Valve CW-0351 is closed.	<i>Will contact a Plant Operator to determine valve position.</i>
	BOP	Starts CWP # 14	<i>Crew will likely make a plant announcement prior to starting the pump.</i>
	BOP	Verifies # 14 CWP Discharge Valve opens fully.	<i>Even though there is Control Room indication of this valve, the procedure requires that valve position be checked locally.</i> <i>Event # 2 will automatically occur once the discharge valve is fully open by Control Room Indication.</i>
	BOP	After CWP # 14 has been operating for at least 5 minutes, contacts the Plant Operator to open Vacuum Breaker Isolation Valve CW-0351.	<i>Because it takes the discharge valve some time to open, the operator will continue in the procedure until the next event occurs. These steps are primarily done locally in the plant.</i>

OPERATOR ACTIONS (Cont')

Op Test # 1 Scenario No.: Event No.: 2			
Event Description: Pressurizer Level Channel LT-465 Fails High			
Time	Position	Applicant's Actions or Behavior	Notes
	RO	Acknowledges and reports the following Annunciators on Control Panel CP004: <ul style="list-style-type: none"> • PRZR LEVEL HI RX TRIP ALERT • PRZR LEVEL DEV HI B/U HTRS ON • CHG FLOW HI/LO 	<i>Operator may diagnose that Pressurizer level channel LI-0465 has failed high at this point. If not, there is a procedure step to diagnose for instrument failure.</i>
	SRO (continuous)	Directs/ensures actions of 0POP04-RP-0002, Loss of Automatic Pressurizer Level Control.	
	RO	Places FCV-0205, CHG FLOW CONT in MANUAL and adjusts as necessary to maintain Pressurizer level at program.	<i>The failure will result in automatic Pzr. level control lowering charging flow and Pzr. Level if no action taken.</i>
	RO	Verifies Letdown is in service.	
	RO	Checks Pzr. Level channels operable and reports Pzr. Level Channel 465 has failed high.	
	RO SRO	Performs the following for the noted failure: <ul style="list-style-type: none"> • De-selects the failed channel. • Selects the Pzr. Level Recorder on CP-005 to an operable channel. • Places Heater Group 1C to ON • Notifies I&C to trip or bypass the failed channel. 	<ul style="list-style-type: none"> • <i>May already be selected to an operable channel.</i> • <i>This is a Tech Spec action.</i>
	RO	Checks that all Tavc channels are operable and that Tavc is within 1.5 °F of Tref.	
	RO	Checks: <ul style="list-style-type: none"> • Pzr. Level is > 17% • Normal Letdown is in service 	
	RO	Determines Pzr. Level Controller LK-0665 is operable, places controller in MANUAL to adjust output to match Charging Flow Controller, then returns controller to AUTO.	
	RO	Determines Charging Flow Controller FK-0205 is operable.	

OPERATOR ACTIONS (Cont')**Op-Test No.: # 1 Scenario No.: # 1 Event No.: 2****Event Description: Pressurizer Level Channel LT-465 fails high (cont'd)**

Time	Position	Applicant's Actions or Behavior	Notes
	RO	Places FCV-0205, CHG FLOW CONT in AUTO and ensures Pressurizer level is being maintained at program.	
	RO	Check that Excess Letdown is isolated.	
	SRO	Refers to TS for failed Channel and determines the following:	<i>TS Table 3.3-1, item 12 states the channel may be bypassed, but must be tripped in < 72 hr.</i> <i><u>Event # 3</u> will occur once TS have been consulted.</i>

OPERATOR ACTIONS (Cont')**Op-Test No.: 1 Scenario No.: 1 Event No.: 3****Event Description: SG 'A' Steam Pressure Channel PT-514 fails low**

Time	Position	Applicant's Actions or Behavior	Notes
	BOP	Acknowledges and reports Annunciators on Control Panel CP006: <ul style="list-style-type: none"> • SG 1A STM PRESS LO ALERT • SG 1A STM PRESS RATE HI ALERT • SG 1A STM/FW FLOW MSMTCH 	
	SRO/BOP C	Performs relevant immediate actions of 0POP04-FW-0001: <ul style="list-style-type: none"> • DETERMINES SG 'A' MAIN FEEDWATER REG VALVE (MFRV) CONTROLLER IS RESPONDING INAPPROPRIATELY IN AUTOMATIC. • PLACES SG 1A FEEDWATER MFRV CONTROLLER IN MANUAL AND ADJUSTS OUTPUT TO RESTORE SG 1A LEVEL TO PROGRAM 	<i>These are intended to be immediate actions, but can be done subsequent as well. Important aspect is for operator to avoid the need for a manual or automatic trip by controlling SG 'A' level.</i>
	SRO (continuous)	Directs/ensures actions of 0POP04-FW-0001, Loss of Steam Generator Level Control.	
	SRO	Ensures immediate actions are taken	
	SRO/BOP	Determine SGFPT controls are responding in automatic	
	SRO/BOP	Determine 'A' Mn. Reg Valve is responding in Manual.	
	SRO/BOP	Checks status of SG Feedpump Master and individual speed controllers.	
	SRO/BOP	Ensure appropriate Feed to steam DP	
	BOP	Restores SG 1A NR level 68-74%	
	SRO/BOP	Ensure all SG levels 20-87.5%	

OPERATOR ACTIONS (Cont')**Op-Test No.: 1 Scenario No.: 1 Event No.: 3****Event Description: SG 'A' Steam Pressure Channel PT-514 fails low (cont'd)**

Time	Position	Applicant's Actions or Behavior	Notes
	BOP	Checks SG water level control instruments for failures. Identifies that steam pressure channel PT-514 for SG 1A has failed low.	<i>May also report the related Steam Flow Channel is inoperable.</i>
	BOP	Selects alternate steamflow channel for SG 1A level control.	
	BOP	Performs the following: <ul style="list-style-type: none"> • Verifies SG levels between 68% and 74%. • Checks Auto Control is operable for all SG Reg Valve Controllers • Places SG 1A Feed Regulating Valve in AUTO and monitors for proper operation. 	
	BOP	Checks Feedpump Master Speed Controller in Auto.	
	SRO	Checks Tech Specs and determines the following apply: Table 3.3-3, items 1.f, 4.c and 4.e (action 20 for all 3): the channel may be bypassed, but must be tripped in < 72 hr.	<i>Event # 4 will be initiated after TS have been consulted for failed steam pressure channel.</i>
	SRO	Notifies I&C to trip or bypass the failed channel.	

OPERATOR ACTIONS (Cont')**Op-Test No.:** #1 **Scenario No.:** 1 **Events No.:** 4 through 6**Event Description:** 1B Steam Generator Tube Rupture (5 minute ramp), ATWS, Steam Dump Failure, IR Channel Failure

Time	Position	Applicant's Actions or Behavior	Notes
	RO/BOP	Acknowledges and announces radiation monitoring alarms and begins an investigation into possible tube leak.	
	SRO	Begins investigation of SG tube leakage by directing RO/BOP to monitor RCS leakage and identify the affected SG.	
	RO/BOP	Identifies the affected SG as 1B SG.	
	SRO (continuous)	Directs/ensures operator actions of 0POP04-RC-0004, Steam Generator Tube Leakage.	<i>Only a few, if any, actions of 0POP04-RC-0004 will be performed because the leak rate quickly escalates into a rupture requiring a Reactor trip and SI.</i>
	SRO/BOP	Verify affected SG is SG 1B	
	SRO	Notes procedure requirement to maintain contact with HP prior to performing local operator actions	
	SRO	Notifies Chemistry to sample SG's and monitor selected Rad monitors.	
	SRO/BOP	Ensures blowdown is aligned to Demins	
	SRO	Ensures that RO monitor and report status of Pressurizer level and VCT level.	
	RO	Control and monitor CVCS charging and letdown to maintain VCT level greater than 15% and Pressurizer level greater than 17%	
	SRO	Determines whether a normal shutdown or fast load reduction is required based on leakage rate and rate of change	

OPERATOR ACTIONS (Cont')

Op-Test No.: #1 Scenario No.: 1 Events No.: 4 through 6			
Event Description: 1B Steam Generator Tube Rupture (5 minute ramp), ATWS, Steam Dump Failure, IR Channel Failure			
Time	Position	Applicant's Actions or Behavior	Notes
	ALL	Reactor Trip and SI initiated due to failure to maintain Pzr level and/or VCT level.	<i>Crew may or may not have opportunity to manually actuate before auto actuation occurs. Event #5, ATWS, will become apparent when either an automatic trip signal is generated or a manual Reactor trip is attempted.</i>
	ALL	Determine an automatic or manual reactor trip did not occur.	
	RO/BOP	Determine neither Reactor Trip Sw. works	
	BOP	Attempts to opens LC 1K1 and 1L1 breakers	
	RO/BOP	Dispatch a Plant Operator to locally open the Reactor Trip Breakers	
	BOP	When a reactor trip occurs, re-closes LC 1K1 and 1L1 breakers	
	SRO	Determines the Reactor hasn't tripped and directs/ensures the actions of OPOP05-EO-FRS1, Response to Nuclear Power Generation, ATWS	
	RO/BOP	Determines a Reactor Trip has not occurred and ensures the following: <ul style="list-style-type: none"> • Manual trip w/both trip switches has been attempted • Inserts control rods manually • Open LC 1K1 and 1L1 breakers • Plant Operator dispatched to locally open reactor trip breakers 	<i>Immediate Action</i> <i>- The reactor trip breakers will be open as AFW pumps are started – integral to scenario. .</i>
	BOP	Verifies turbine is tripped	<i>Immediate Action</i>

OPERATOR ACTIONS (Cont')

Op-Test No.: #1 Scenario No.: 1 Events No.: 4 through 6			
Event Description: 1B Steam Generator Tube Rupture (5 minute ramp), ATWS, Steam Dump Failure, IR Channel Failure			
Time	Position	Applicant's Actions or Behavior	Notes
	BOP	Verifies AFW Pumps in service	<i>Available AFW Pumps will have to be manually started.</i> <i>The reactor trip breakers will open once the turbine driven AFW Pump is started.</i>
	ALL	Determines a Reactor Trip has occurred.	<i>Once the Reactor Trip Breakers have been opened.</i> <i>Event # 7 will occur at this point but won't be apparent for 15-20 min. when the Source Ranges should have energized. Refer to 'Operator Actions' for Event #7.</i>
	SRO/RO	Check Extended Range NI's to determine they indicate < 5% power with a negative SUR	<i>This step is on the Conditional Information page of FRS1 and will allow the SRO to transition to the end of the procedure.</i>
	SRO	Goes to Step 18, Verify adequate Shutdown Margin (checks if Emergency Boration is in service)	
	SRO/BOP (continuous)	Ensures that AFW flow is isolated to SG B when level is >14% narrow range.	<ul style="list-style-type: none"> <i>Normal method at this point is to place AFW Pump # 12 in PTL</i> <i>This action can be done as soon as the crew diagnoses the SGTR in 'B' SG.</i>
	SRO	Transitions to 0POP05-EO-EO00, Reactor Trip or SI	

OPERATOR ACTIONS (Cont')

Op-Test No.: #1 Scenario No.: 1 Events No.: 4 through 6			
Event Description: 1B Steam Generator Tube Rupture (5 minute ramp), ATWS, Steam Dump Failure, IR Channel Failure			
Time	Position	Applicant's Actions or Behavior	Notes
	RO/BOP	Completes immediate actions of EO00, Reactor Trip/SI: <ul style="list-style-type: none"> Reactor tripped Turbine tripped AC ESF Busses energized Determines SI is actuated or required 	
	SRO	Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed.	
	ALL (continuous)	Monitor for RCP trip criteria: <ul style="list-style-type: none"> RCS Pressure < 1430 psig At least 1 HHSI Pump running 	<i>Conditions for tripping RCP's should not exist at this time.</i>
	SRO/BOP	Directs BOP to perform Addendum 5, Verification of SI Equipment Operation: <ul style="list-style-type: none"> FW Isolation Check for Steamline Isolation AFW Status Phase 'A' Containment Isolation ECW and CCW Containment Cooling ECCS pump and valve status Containment Ventilation Isolation HVAC systems (CR/EAB/FHB) 	<i>May have to throttle AFW to limit RCS cooldown.</i>
	SRO/RO	Check plant status: <ul style="list-style-type: none"> RCP Seal cooling RCS cooldown Pzr valve status Excess Letdown Isol Valves Selected Cntmt Isolation Valves 	
	ALL	Determines SG 1B is ruptured.	
	SRO	Transitions to EO30, SGTR based on abnormal SG radiation.	
	ALL (continuous)	Monitors the status of Critical Safety Functions when the crew transitions to 0POP05-EO-EO30.	

OPERATOR ACTIONS (Cont')

Op-Test No.: #1 Scenario No.: 1 Events No.: 4 through 6			
Event Description: 1B Steam Generator Tube Rupture (5 minute ramp), ATWS, Steam Dump Failure, IR Channel Failure			
Time	Position	Applicant's Actions or Behavior	Notes
	SRO/RO (continuous)	Checks RCP trip criteria. Ensures RCPs are tripped if RCS pressure drops to less than 1430 psig	
	BOP	Identifies Ruptured SG as SG 1B.	
	SRO/BOP	Isolates Feedwater flow into and steam flow from SG 1B by: <ul style="list-style-type: none"> • Adjusting SG 1B PORV setpoint to between 1260 and 1265 psig and checking SG PORV is closed • Verifying Blowdown isolated. • Closing SG 1B MSIV and MSIB • Verifies ruptured SG level is >14% then isolates AFW to ruptured SG • Reset SI and SG Lo-Lo Level signals • Close SG 1B AFW OCIV 	
	SRO/BOP	Determines SG B pressure is > 468 psig	
	SRO/RO	Checks Pzr PORV availability	
	SRO/BOP C *denotes critical portion	INITIATES RCS COOLDOWN <ul style="list-style-type: none"> • DETERMINES TARGET TEMPERATURE* • COOLS DOWN TO TARGET TEMPERATURE* • Blocks Low Steamline Pressure SI when RCS pressure <1985 psig • Determines condenser is available • Places Steam Dumps in Steam Pressure Mode • Dumps steam to condenser at max rate. • Stops cooldown when target temp reached. 	<i>Determining target temperature should be done after MSIV is closed. Doing it before will result in a lower target temperature than necessary (but is conservative)</i> <i>Event #6 will be apparent when the crew attempts to open the Steam Dumps. With this failure, the crew will have to use the SG PORV's to perform the RCS cooldown.</i>

	RO	Reset actuation systems for: <ul style="list-style-type: none">• SI• SI Auto Recirc• Sequencers• Phase 'A' and 'B' Isolations	<i>These steps can be done concurrent with the cooldown</i>
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OPERATOR ACTIONS (Cont')

Op-Test No.: #1 Scenario No.: 1 Events No.: 4 through 6			
Event Description: 1B Steam Generator Tube Rupture (5 minute ramp), ATWS, Steam Dump Failure, IR Channel Failure			
Time	Position	Applicant's Actions or Behavior	Notes
	RO/BOP	Restores IA to containment when directed by verifying IA pressure is >95 psig and opening the IA OCIV.	<i>These steps can be done concurrent with the cooldown</i>
	SRO/BOP	Ensures Intact SG levels are 22-50%	<i>These steps can be done concurrent with the cooldown</i>
	SRO/RO	Establish maximum charging flow	<i>These steps can be done concurrent with the cooldown Maximum charging flow should be ≤ 200 gpm indicated charging flow (depending on seal injection)</i>
	SRO/BOP	Determines Ruptured SG pressure is stable or increasing	<i>This and subsequent steps cannot be performed until the cooldown is complete.</i>
	SRO/RO	Determines subcooling >55 Deg F	
	SRO/RO	Depressurize RCS to minimize break flow: <ul style="list-style-type: none"> • Determines whether normal spray is available. If not, uses Aux. Spray • Turns off Pressurizer Heaters • Initiates max spray • Stops De-pressurization when any of the following occur: <ul style="list-style-type: none"> - RCS press < ruptured SG press AND Pzr Level > 8% - Pzr Level > 70% - RCS Subcooling < 35 Deg F 	<i>Normal Spray is available if RCPs are running</i> <i>Scenario will be terminated once RCS depressurization is stopped.</i>

OPERATOR ACTIONS**Op-Test No.: 1 Scenario No.: 1 Event No.: 7****Event Description:** Intermediate Range Channel N36 failure of Compensating Voltage

Time	Position	Applicant's Actions or Behavior	Notes
	RO	Determines IR Channel N36 has failed in high direction, informs SRO	<i>This event will not be apparent until 15-20 minutes after the Reactor trip.</i>
	SRO	Directs RO to manually energize Source Range Instruments once Intermediate Range is below 10^{-10} amps.	
	RO	Manually energizes Source Range Instruments with the SR TRN R and S BLOCK/UNBLOCK sw. on CP-005.	
	RO	Determines both Source Range Instruments are reading properly, reports status to SRO	

CRITICAL TASK SUMMARY

POSITION	EXPECTED RESPONSE	ACCEPTANCE CRITERIA	SAT/ UNSAT
SRO/BOP	<ul style="list-style-type: none"> • DETERMINES SG 'A' MAIN FEEDWATER REG VALVE (MFRV) CONTROLLER IS RESPONDING INAPPROPRIATELY IN AUTOMATIC. • PLACES SG 1A FEEDWATER MFRV CONTROLLER IN MANUAL AND ADJUSTS OUTPUT TO RESTORE SG 1A LEVEL TO PROGRAM 	Manually control SG level such that a manual or automatic reactor trip is not necessary.	
SRO/BOP C *denotes critical portion	INITIATES RCS COOLDOWN <ul style="list-style-type: none"> • DETERMINES TARGET TEMPERATURE* • COOLS DOWN TO TARGET TEMPERATURE* 	Properly select and maintain target temperature of cooldown based on the chart provided in 0POP05-EO-EO30, SGTR.	

TURNOVER INFORMATION

- Reactor Power is 30% during a plant startup (0POP03-ZG-0005, step 7.25)
- Maintain current power level until CWP # 14 is placed in service.
- AFW Pump # 11 is OOS for motor maintenance (investigation of abnormal vibration).
- Cycle Burnup is 150 MWD/MTU (BOL)
- RCS Boron Concentration is 1664 ppm
- Dilutions to maintain current power are approximately 10 gallons every half hour. Total Batch Integrator set at 10 gallons, getting 11. Xenon is building in with the power increase.
- Boric Acid Tanks 'A' and 'B' are at 7700 ppm.
- No liquid waste discharges are in progress or planned.
- No personnel are in containment.
- FHB Truck Bay doors are closed
- No ESF DG FOST's are on recirc.

INITIAL LICENSE EXAM

NRC OPERATING TEST # 1

SCENARIO # 2

Revision # 1

Week of 11/5/2007

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

SCENARIO MISCELLANEOUS INFORMATION**INSTRUCTOR NOTES:**

Refer to the Instructor Guide for directions on Simulator Setup, Expected Booth Communications and Expected Booth Actions.

CRITICAL PARAMETERS:

The following parameters may be of value in evaluating crew performance and should be automatically recorded during the scenario. Once the scenario is complete for each crew, printout the Critical Parameters and label the printout with date, time, Crew # and scenario #.

- Reactor Power
- DA Storage Tank Level
- 'D' SG Pressure
- 'D' AFW Flow
- 'D' SG Steamflow
- RCS Pressure
- RCS Temperature
- Containment Pressure (WR)

OPERATOR ACTIONS TABLE NOTES:

1. Critical Tasks are indicated by "C" in the position column and indicated in bold type.
2. Actions required throughout the event are indicated as "(continuous)" in the position column.
3. Shaded cells indicate procedural entry points.

OPERATOR ACTIONS

Op-Test No.: # 1 Scenario No.: # 2 Event No.: 1 Event Description: Shift Condensate Pumps			
Time	Position	Required Operator Actions	Notes
	SRO	Directs the BOP to start Condensate Pump # 13, and then secure Condensate Pump # 12 in accordance with 0POP02-CD-0001, Condensate System.	
	BOP	Contacts a Plant Operator to perform the following: <ul style="list-style-type: none"> • Verify mini-flow recirc line is full (vented). • Ensure Cond. Pumps common vent line isolation valve CD-0801 is open. • Open Cond Pump Discharge Vent Line Isolation Valve for # 13 Cond Pump. • Ensure seal water pressure for Cond Pump # 13 is 15-20 psig. 	
	BOP	Checks Main Condenser Hotwell Level	
	BOP	Starts Condensate Pump # 13	
	BOP	Verifies the following on Integrated Computer System (ICS) for Condensate Pump # 13: <ul style="list-style-type: none"> • Motor Stator Winding Temperature (<200 °F) • Thrust Bearing Temperature (<190 °F) 	
	BOP	Directs Plant Operator to close the Cond Pump Discharge Vent Line Isolation Valve opened earlier.	
	BOP	Ensures Condensate Pump # 13 Mini-flow recirc valve opens.	
	BOP	Opens Discharge Valve for Condensate Pump # 13.	
	BOP	Ensures Condensate Pump # 13 Mini-flow recirc valve closes once the discharge valve is open.	<i>The Condensate Pump Mini-flow valves are controlled by flow, thus mini-flow valve may not fully close, depending on pump flow.</i>

OPERATOR ACTIONS (Cont')**Op-Test No.:** # 1 **Scenario No.:** # 2 **Event No.:** 1**Event Description:** Shift Condensate Pumps (cont'd.)

Time	Position	Required Operator Actions	Notes
	BOP	Secures Condensate Pump # 12 by performing the following: <ul style="list-style-type: none">• Close Condensate Pump # 12 Discharge Valve• Ensure Condensate Pump # 12 Mini-Flow Recirc Valve opens.• Stops Condensate Pump #12.	<i>Event # 2 will automatically occur 1 minute after Condensate Pump # 12 is secured (Green light on)</i>

OPERATOR ACTIONS (Cont')

Op-Test No.: # 1 Scenario No.: # 2 Event No.: 2 Event Description: Loss of 4160v Bus E1B			
Time	Position	Required Operator Actions	Notes
	RO/BOP	Acknowledges and reports the following alarms (partial list): <ul style="list-style-type: none"> • 4KV E1B SPLY BKR TRIP • 4KV E1B UNDERVOLT ALERT 	
	RO	Determines 4160v Bus E1B is de-energized due to an overcurrent lockout condition.	
	SRO	Directs/ensures actions of 0POP04-AE-0001, First Response to Loss of Any or All 13.8 kV or 4.16 kV Bus.	
	SRO	Determines plant is in Mode 1 and all RCP's are running.	
	SRO/RO	Determine #12 ESF DG is running, but the output breaker is not closed due to overcurrent lockout.	<i>Breaker will not be closed due to lockout on bus.</i>
	RO	Places # 12 ESF DG in Pull-to-Stop	<i>This action may be done sooner if the crew diagnoses the need.</i>
	SRO/BOP	Check the following: <ul style="list-style-type: none"> • At least 1 Closed Loop Auxiliary Cooling Water (CL-ACW) Pump running. • At least 1 Instrument Air Compressor is running. • At least 1 Condensate Pump Running 	
	SRO/RO	Check the following: <ul style="list-style-type: none"> • RCP Seal Cooling exists • Normal Letdown in service • At least 1 Charging Pump running. 	

OPERATOR ACTIONS (Cont')

Op-Test No.: # 1 Scenario No.: # 2 Event No.: 2 Event Description: Loss of 4160v Bus E1B (cont'd)			
Time	Position	Required Operator Actions	Notes
	SRO/RO	Determines 'C' Train CCW must be placed in service to support 'A' CCP; places Mode Sw. to RUN and ensures the following occur: 'C' CCW Pump 'C' ECW Pump 'C' ECW Pump discharge isolation valve opens.	<i>To place 'C' Train equipment in service, the operator will place the 'C' Train Mode switch for CCW/ECW in RUN.</i>
	SRO/RO	Determines all dilution flowpaths are isolated: - BTRS bypassed - Demins bypassed - RMW Pumps in PTL - RMW valves closed	<i>- Operator action will be required to accomplish the last 3 items.</i>
	SRO/RO	Checks RCS pressure, temperature and Pressurizer level are being maintained within their normal bands.	
	SRO/BOP	Maintain SG levels 68-74%	
	SRO/BOP	Determine 4160v Bus E1B is de-energized and place 'B' SG PORV in MANUAL.	<i>This action can be done at anytime from the CIP.</i>
	SRO	Transitions to 0POP04-AE-0003, Loss of Power to One or More 13.8kV Busses	<i>Event # 3 will occur at this point. Tech Specs associated with the loss of 4160v Bus can be reviewed after the scenario. See note on next page for example TS that would apply.</i>

OPERATOR ACTIONS (Cont')**Op-Test No.:** # 1 **Scenario No.:** # 2 **Event No.:** 2**Event Description:** Loss of 4160v Bus E1B (cont'd)

Time	Position	Required Operator Actions	Notes
<p><u>NOTE:</u> There are numerous Tech Specs that must be entered due to loss of power to the ESF 4160v Bus. Below is a partial listing:</p> <p>3.8.1.1, A.C. Sources due to # 12 ESF DG being inoperable (control placed in Pull-to-Stop)</p> <p>3.8.2.1, DC Sources</p> <p>3.8.3.1, Onsite Power Distribution</p> <p>3.5.2, ECCS, due to 'B' Train HHSI and LHSI being inoperable</p> <p>3.5.6, RHR, due to 'B' Train RHR being inoperable</p> <p>3.7.3, Component Cooling Water (CCW), due to 'B' Train CCW Pump being inoperable</p> <p>3.7.4, Essential Cooling Water (ECW), due to 'B' Train ECW Pump being inoperable.</p>			

OPERATOR ACTIONS (Cont')

Op-Test No.: # 1 Scenario No.: # 2 Event No.: 3 and 4 Event Description: Condensate Pump Trip and Power Reduction			
Time	Position	Required Operator Actions	Notes
	BOP	Acknowledges and announces Annunciator 9M01-A1, COND PMP TRIP.	
	BOP	Reports that condensate pump #13 has tripped. Refers to Annunciator Response.	
	BOP	Closes discharge valve on Condensate Pump #13	<i>This action can be taken any time during this event.</i>
	SRO	Enters 0POP04-CD-0001, Loss of Condensate Flow.	
	SRO	Determines that an additional condensate pump is required based on current plant conditions and directs the BOP to start Condensate pump # 12.	
	BOP	Starts Condensate Pump #12 and opens its discharge valve.	<i>Before starting the pump an operator may contact a plant operator to determine the pump has had a recent vent.</i>
	BOP	Controls DA level control valve to clear SFFP Seal Water Low Flow alarms and/or to restore DA level as necessary.	<i>1) Due to starting the standby pump these actions may not be necessary.</i> <i>2) Seal alarms will not come in immediately.</i>
	BOP	Reports that Condensate Pump #12 has also tripped	<i>Occurs 45 sec. after pump is started.</i>
	SRO	Returns or continues in 0POP04-CD-0001, Loss of Condensate Flow.	
	SRO/BOP	Dispatches a Plant Operator to determine the cause of trip for Condensate Pump #12 and/or 13.	
	SRO	Directs the crew to perform a load decrease IAW Addendum 3 of 0POP04-CD-0001, Loss of Condensate Flow.	

OPERATOR ACTIONS (Cont')

Op-Test No.: # 1 Scenario No.: # 2 Event No.: 3 and 4 Event Description: Condensate Pump Trip and Power Reduction			
Time	Position	Required Operator Actions	Notes
	RO C*	Per Addendum 3 - *commences boration - Checks Rod Control in Auto - Energizes Pressurizer Heaters	
	BOP C*	Per Addendum 3 - Checks Turbine is in Impulse Pressure IN - *Reduce load at a rate of no more than 5%/min.	- Unit Supervisor should direct the desired load rate for power decrease.
	SRO	Has crew maintain the following parameters within limits: - Generator VARS - Tave/Tref deviation - Pressurizer Level - Pressurizer Pressure - SG NR levels - MSR Outlet Temperatures	
	SRO	Refers to 0POP04-TM-0005, Fast Load Reduction, for additional actions: - Steam dumps armed - FWH 11A/11B bypass closed - Less than 3 SGFPT's in service	- Steam Dumps may not arm/operate; depends on rate of load decrease.

OPERATOR ACTIONS (Cont')**Op-Test No.: # 1 Scenario No.: # 2 Event No.: 5****Event Description:** Dropped Control Rod.

Time	Position	Applicant's Actions or Behavior	Notes
	RO	Acknowledges and responds to the following Annunciators: <ul style="list-style-type: none"> • RPI TROUBLE • ROD SUPV MNTR ROD POSITION TRBL • ROD BOTTOM 	
	RO	Diagnoses Rod M12 has dropped into the core, informs the SRO.	<i>Rod is in Control Bank 'D'</i>
	RO	Performs immediate actions <ul style="list-style-type: none"> • Ensures Rod Control in Manual • Ensures no rod motion • Checks for dropped rods 	<i>Having rods in manual will require the RO to use boron for temperature control during the load decrease.</i>
	SRO	Enters 0POP04-RS-0001, Control Rod Malfunction.	
	SRO/RO	Verify Immediate Actions complete	
	SRO/RO	Determines only one control rod is dropped.	
	CREW	Notifies Plant Ops Manager, Rx Engineering and I&C Maintenance.	
	SRO	Documents entry into Tech Spec 3.1.3.1.b.3.	<i>Event # 6 will automatically occur 5 min. after the control rod drop. If further discussion of Tech Specs is needed for the dropped rod, it will need to be done after the scenario.</i>
	SRO/RO	Record specific data for dropped rod.	
	SRO	Determines a power reduction is not required IAW 0POP04-RS-0001.	
	SRO/RO	Check group rod positions for each bank of control and shutdown rods are in agreement.	<i>Subsequent procedure steps address control rod recovery. It's likely the SRO will not attempt to recover the dropped rod until the power reduction for loss of Condensate Pumps is complete.</i>

OPERATOR ACTIONS (Cont')

Op-Test No.: 1 Scenario No.: # 2 Event No.: 6 Event Description: Steam break in containment on SG 1D			
Time	Position	Applicant's Actions or Behavior	Notes
	ALL	Responds to: <ul style="list-style-type: none"> Increasing Steam Flow SG LEVEL DEVIATION ALARMS (all SG's) 	<i>This event automatically actuates 5 minutes after the previous event (rod drop)</i>
	ALL	Diagnose Reactor Trip and SI conditions exist.	<i>Conditions will also exist for Main Steam Isolation. RCB pressure may increase too rapidly for the crew to manually actuate a trip and SI.</i>
	SRO	Directs/ensures crew enters 0POP05-EO-EO00, Reactor Trip or Safety Injection.	
	RO/BOP	Completes immediate actions of EO00, Reactor Trip/SI: <ul style="list-style-type: none"> Reactor tripped Turbine tripped AC ESF Busses energized SI actuated or required 	
	SRO	Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed.	
	ALL (continuous)	Trips RCPs following Phase 'B' isolation.	<i>Conditions for Phase 'B' Isolation will occur very quickly.</i>
	SRO/BOP	Secures feed to SG 'D' when faulted condition diagnosed.	<i>Can close Reg Valve or take steps to secure Turbine-driven AFWP if SG 'D' diagnosed as being faulted early.</i>
	SRO/BOP	Directs BOP to perform Addendum 5, Verification of SI Equipment Operation	<i>Event # 7 should be discovered at this time.</i>

OPERATOR ACTIONS (Cont')**Op-Test No.: 1 Scenario No.: # 2 Event No.: 6****Event Description:** Steam break in containment on SG 1D (cont'd)

Time	Position	Applicant's Actions or Behavior	Notes
	RO	Verifies Containment Spray initiated and Containment Isolation Phase 'B' actuated.	<i>Some Containment Isolation Valves will not close due to loss of power on 'B' ESF Bus. One of these (MOV-0318) must be locally closed to isolate the penetration. All others have redundant valves that are closed.</i>
	SRO/RO	Check plant status: <ul style="list-style-type: none"> • RCP Seal cooling • RCS cooldown • Pzr valve status • RCP trip criteria • Selected Containment Isol. Valves 	
	SRO/BOP	Diagnose that SG 1D is faulted (steam break)	
	SRO	Informs crew of transition to EO20, Faulted SG Isolation and to monitor Critical Safety Functions	
	ALL	Evaluate plant conditions and alert the crew of an orange path on containment CSF and that entry into FRZ1 is required.	
	SRO (continuous)	Transitions to 0POP05-EO-FRZ1, Response to High Containment Pressure, on an orange path on containment CSF.	<i>The crew will transition to EO20 instead of FRZ1 if Addendum 5 of EO00 is not yet complete. Refer to next page for EO20 actions.</i>
	SRO/RO	Verifies Containment Isolation Phase 'A' and Containment Ventilation Isolation.	<i>There will be some valves that haven't closed due to loss of power, but these penetrations are isolated by redundant valves.</i>

OPERATOR ACTIONS (Cont')**Op-Test No.: 1 Scenario No.: # 2 Event No.: 6****Event Description:** Steam break in containment on SG 1D (cont'd)

Time	Position	Applicant's Actions or Behavior	Notes
	SRO/RO	Determines Containment Spray is required and in service. <ul style="list-style-type: none"> Stops RCPs if not already done. Verifies proper spray valve alignment Verifies Containment Phase 'B' Isolation 	<i>Some Containment Isolation Valves will not close due to loss of power on 'B' ESF Bus. One of these (MOV-0318) must be locally closed to isolate the penetration. All others have redundant valves that are closed.</i>
	SRO/RO	Checks Reactor Containment Fan Cooler (RCFC) status.	
	SRO/BOP	Verify MSIV's and MSIB's are closed	
	SRO/BOP	Diagnose SG 'D' is faulted	
	SRO/BOP C	ISOLATES FAULTED SG 'D': <ul style="list-style-type: none"> Verifies MSIV is closed Feedwater Isolation has occurred <ul style="list-style-type: none"> FWIV & FWIB valves Pre-heater Bypass valve Main and Low power Reg valves Reset SI Reset S/G Lo-Lo level actuation Close D S/G AFW OCIV 	<i>Once the faulted S/G is identified, the AFW pump may secured (pump may have been secure earlier)</i>
	SRO	Transitions to 0POP05-EO-EO20, Faulted SG Isolation after completing the actions of FRZ1.	
	SRO/BOP	Verifies faulted SG is isolated and: <ul style="list-style-type: none"> Resets ESF Load Sequencers Secures Steam-driven Aux Feedpump Verifies 'D' SG PORV, Blowdown and sample isolation valves closed. 	<i>Steps to isolate the faulted SG are the same as in FRZ1, the procedure just completed. The bulleted items are additional actions.</i>
	ALL	Check for secondary radiation <ul style="list-style-type: none"> Lineup for secondary samples Check Rad Monitors 	

OPERATOR ACTIONS (Cont')**Op-Test No.:** 1 **Scenario No.:** # 2 **Event No.:** 6**Event Description:** Steam break in containment on SG 1D (cont'd)

Time	Position	Applicant's Actions or Behavior	Notes
	ALL	Check if SI flow can be terminated	<i>Plant conditions should not allow for SI termination at this time.</i>
	SRO (continuous)	Transitions to EO10, Loss of Reactor or Secondary Coolant	<i>Terminate the scenario after EO20 and FRZ1 have been completed.</i>

OPERATOR ACTIONS (Cont')

Op-Test No.: # 1 Scenario No.: # 2 Event No.: 7 Event Description: 'A' Train Essential Chiller Trips			
Time	Position	Required Operator Actions	Notes
	BOP	Determines 'A' Train Essential Chiller has not started.	
	BOP	Attempts a manual start of 'A' Train Essential Chiller.	<i>Per Addendum 5 guidance.</i>
	BOP	Determines 'A' Train Essential Chiller will not start.	
	BOP	Secures 'A' Train EAB HVAC: <ul style="list-style-type: none"> • Return Fan • Supply Fan 	<i>Per Addendum 5 guidance, but may first inform SRO to get concurrence.</i>

CRITICAL TASK SUMMARY

POSITION	EXPECTED RESPONSE	ACCEPTANCE CRITERIA	SAT/ UNSAT
RO C	Commences boration to facilitate a load decrease	Manually reduce plant power such that an automatic or manual reactor trip is not required.	
BOP C	Lowers turbine load at $\leq 5\%/min.$		
SRO/BOP C	ISOLATES FAULTED SG 'D': <ul style="list-style-type: none"> • Verifies MSIV closed • Feedwater Isolation has occurred: <ul style="list-style-type: none"> -FWIV & FWIB valves -Pre-heater Bypass valve -Main and Low power Reg valves • Reset SI • Reset S/G Lo-Lo level actuation • Close 'D' S/G AFW OCIV 	Isolates Faulted SG prior to leaving 0POP05-EO-EO20, Faulted SG Isolation	

TURNOVER INFORMATION

- Reactor Power is approximately 60%
- Maintain current power level until Condensate Pumps have been swapped (start #13 Condensate Pump, then stop # 12 Condensate Pump), then continue the plant startup. Currently at step 7.35 of 0POP03-ZG-0005, Plant Startup to 100% (step 7.34 is complete).
- The following equipment is OOS:
 - SUFP (motor refurbishment)
 - 'C' Train Containment Spray Pump (scheduled maintenance – breaker overhaul)
 - 'C' Train RCFC's (scheduled maintenance – breaker overhaul)
- Cycle Burnup is 150 MWD/MTU
- RCS Boron Concentration is 1549 ppm
- Half hour dilutions to maintain current power are approximately 10 gallons. Total Batch Integrator set at 10 gallons, getting 11. Xenon is at building in.
- Boric Acid Tanks 'A' and 'B' are at 7700 ppm.
- No liquid waste discharges are in progress or planned.
- No personnel are in containment.
- FHB Truck Bay doors are closed
- No ESF DG FOST's are on recirc.

INITIAL LICENSE EXAM

OPERATING TEST # 1

NRC BACKUP SCENARIO

Revision # 1

Week of 11/5/2007

Facility: STP**NRC Exam Scenario No.:** Backup**Op-Test No.:** 1**Source:**New X Bank - Significantly Modified Bank - Initial Condition Change

Initial Conditions: 73% power at BOL, 1469 ppmB. Power reduction in progress for turbine blade inspection. FWBP # 11 and “B” Train HHSI, LHSI, CCW Pumps OOS for motor maintenance.

Turnover: 73% power, shutdown in progress. Currently at step 5.12 of OPOP03-ZG-0006.

Event No.	Malf. No.	Event Type*	Event Description
1 (1 min)	NA	RO (R) BOP (R) SRO (R)	Power Reduction
2 (3-5 min)	03-17-02 (True)	RO (C) SRO (C)	Boric Acid Pump ‘B’ trips during first boration of the power reduction – (within approximately 5 minutes of starting power reduction) – integral to scenario.
3 (15 min)	10-09-03 (True)	RO (C) BOP (C) SRO (C)	Loss of Standby Bus 1H – after TRM consulted for BA Pump failure and cue from examiner for load reduction.
4 (35 min)	05-17-01 (1.0)	BOP (I) SRO (I)	1A SG PORV Pressure Transmitter PT-7411 fails high – after crew transitions to OPOP04-AE-0003, or after 15 min.
5 (45 min)	03-23-05 (0.129/0.4)	RO (C) SRO (C)	RCP 1C #1 seal leakage ramped in over 3 min. then increased in severity after 7 min – after T.S. addressed for SG PORV Transmitter or after 10 minutes
6 (60 Min)	02-01-01 (0.0009)	All (M)	SBLOCA – occurs at step 6 of ES01
7 (NA)	Remote L2-60 (True)	BOP (C) SRO (C) RO (C)	Failure of ESF DG # 13 to load - integral to scenario, will occur following SBLOCA on re-sequence

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

SCENARIO MISCELLANEOUS INFORMATION**INSTRUCTOR NOTES:**

Refer to the Instructor Guide for directions on Simulator Setup, Expected Booth Communications and Expected Booth Actions.

CRITICAL PARAMETERS:

The following parameters may be of value in evaluating crew performance and should be automatically recorded during the scenario. Once the scenario is complete for each crew, printout the Critical Parameters and label the printout with date, time, Crew # and scenario #.

- Reactor Power
- SG Pressure (any SG)
- RCP breaker position (all)
- RCS Pressure
- RCS Temperature
- HHSI Flows (all)

OPERATOR ACTIONS TABLE NOTES:

1. Critical Tasks are indicated by "C" in the position column and indicated in bold type.
2. Actions required throughout the event are indicated as "(continuous)" in the position column.
3. Shaded cells indicate procedural entry points.

OPERATOR ACTIONS

Op-Test No.: 1 Backup Scenario Event No.: 2 Event Description: Boric Acid Pump 1B Trips			
Time	Position	Applicant's Actions or Behavior	Notes
	RO	Acknowledges and reports the following status light / annunciator: <ul style="list-style-type: none"> • BA XFER PUMP 1B Bypass/Inop • BA FLOW TO BLENDER DEV 	<i>This alarm does not come in immediately.</i>
	RO	Recognizes and reports that BA Pump 1B has tripped.	
	SRO/RO	Directs/Places BA Pump 1B in PTL	<i>May be done after 1A BA pump is placed in AUTO</i>
	SRO/RO (continuous)	Ensures/performs 0POP09-AN-04M7-E7 annunciator response actions:	
	SRO/RO	<ul style="list-style-type: none"> • Ensures automatic actions have occurred. • Ensures a BA Pump in AUTO • Ensures Makeup System is aligned for automatic makeup per 0POP02-CV-0001 (see below) 	<i>FCV-0110B and 0111B will close automatically stopping the BA addition to the VCT.</i>
	RO	References 0POP02-CV-0001 to ensure Makeup System is aligned for automatic operation: <ul style="list-style-type: none"> • Checks the following in automatic: <ul style="list-style-type: none"> - BA Controller FK-0110 - BA Flow Valve FCV-0110A - MU Stop Valve FCV-0110B - RMW Flow Controller FK-0111 - RMW Flow Valve FCV-0111A' - RMW MU Stop Valve FCV-0111B • Ensures the Standby RMW and BA Pumps are in Auto • Ensures the RMW and BA Pumps not selected for Standby are in PTL. • Places RC M/U Control in AUTO • Ensures BA Flow Controller FK-0110 is set at desired value. • Places RC M/U Control to START 	

OPERATOR ACTIONS

Op-Test No.: 1 Backup Scenario Event No.: 2			
Event Description: Boric Acid Pump 1B Trips			
Time	Position	Applicant's Actions or Behavior	Notes
	SRO/RO	Resets the Reactor Coolant Makeup System and re-commences boration by placing RC M/U CONT SYS ON switch to STOP, then START	
	SRO/RO	Dispatches a Plant Operator to investigate BA Pump 1B trip.	
	SRO	Refers to TRM 3.1.2.2 (LCO is satisfied).	<i>Event #3 will occur after some power reduction and Tech Spec consultation or on Examiner cue.</i>

OPERATOR ACTIONS

Op-Test No.: # 1 NRC Backup Scenario Event No.: 3			
Event Description: Loss of Standby Bus 1H			
Time	Position	Required Operator Actions	Notes
	ALL	Acknowledges and responds to the following alarms (partial list): <ul style="list-style-type: none"> • 13 KV 1H SUPPLY BKR ST 130 TRIP • 13 KV 1H XFMR E1C FDR BKR TRIP • 4KV E1C SPLY BKR TRIP 	
	ALL	Diagnose that Standby Bus 1H is de-energized.	
	SRO	Directs/ensures actions of 0POP04-AE-0001, First Response to Loss of Any or All 13.8 kV or 4.16 kV Bus.	
	SRO	Determines plant is in Mode 1 and all RCP's are running.	
	SRO/RO	Determine #13 ESF DG is running with the output breaker closed.	<i>DG is now powering 4.16 kV Bus E1C.</i>
	SRO/RO	Checks ECW status: <ul style="list-style-type: none"> • ECW Pump running • ECW Pump Discharge Valve open • ECW Blowdown isolated 	
	SRO	Checks that appropriate Sequencer loading is or has occurred	<i>-Procedure Addendum 3 is used for this. -The SRO may assign the RO or BOP to perform this Addendum.</i>
	SRO/BOP	Check the following: <ul style="list-style-type: none"> • At least 1 Closed Loop Auxiliary Cooling Water (CL-ACW) Pump running. • At least 1 Instrument Air Compressor is running. • At least 1 Condensate Pump Running 	

OPERATOR ACTIONS

Op-Test No.: # 1		NRC Backup Scenario		Event No.: 3	
Event Description: Loss of Standby Bus 1H (cont'd)					
Time	Position	Required Operator Actions		Notes	
	SRO/RO	Check the following: <ul style="list-style-type: none">• RCP Seal Cooling exists• Normal Letdown (LD) in service• At least 1 Charging Pump running.		<i>- LD will not be in service. The US will have the RO place LD in service (see next page and may have charging flow isolated due to loss of LD).</i>	
	RO	Places Normal Letdown in service per 0POP04-CV-0004: <ul style="list-style-type: none">• CCW in service to the LD Hx.• TCV-0143 in VCT position.• Checks LD pressure approx. equals RCS pressure:<ul style="list-style-type: none">- Opens MOV-0082 & 83- Has Plant Operator place HS-0469 in OPEN- Has Plant Operator provide reading of LD pressure• Takes manual control of PCV-0135 and adjusts output to 50%• Verifies MOV-0023 and 24 open• Verifies LCV-0468 and 0465 are open• Opens LD Isolation FV-0011• Establishes flow by opening an orifice isolation valve.• Adjusts PCV-0135 to establish specified LD pressure and places in AUTO.• Re-establishes charging flow		<i>The operator may use Addendum 4 of 0POP04-CV-0004 or use steps from the procedure body. The actions listed are from the Addendum.</i> <i>There are additional minor steps; the ones listed are the major actions.</i>	

OPERATOR ACTIONS

Op-Test No.: # 1 NRC Backup Scenario Event No.: 3 Event Description: Loss of Standby Bus 1H (cont'd)			
Time	Position	Required Operator Actions	Notes
	SRO/RO	Determines 'B' Charging Pump is in service; checks for 'A' CCW Train to be in service.	
	SRO/RO	Determine the following: All dilution flowpaths are isolated: <ul style="list-style-type: none"> - BTRS bypassed - Demins bypassed - RMW Pumps in PTL - RMW valves closed 	<i>- Operator action will be required to accomplish the last 3 items.</i>
	SRO/RO	RCS pressure, temperature and Pressurizer level are being maintained within their normal bands.	
	SRO/BOP	Maintain SG levels 68-74%	
	SRO/RO	Determine all 4160v ESF Busses are energized.	
	SRO/BOP	Determine Standby Bus 1H is de-energized.	
	SRO	Transitions to 0POP04-AE-0003, Loss of One or More 13.8 KV Standby Bus.	<i>Event 4 will occur here</i>

OPERATOR ACTIONS

Op-Test No.: 1 NRC Backup Scenario Event No.: 4			
Event Description: Steam Generator 1A PORV Pressure Transmitter Fails High			
Time	Position	Applicant's Actions or Behavior	Notes
	BOP	Acknowledges and reports annunciator SG PORV NOT CLOSE on Control Panel CP006.	
	BOP	Diagnoses that 1A SG PORV is open.	
	SRO	Directs/ensures the actions of 0POP04-MS-0001, Excessive Steam Demand.	<i>This procedure permits the crew to take actions out of sequence to isolate steam leakage, but the remainder of the procedure must also be completed..</i>
	BOP	Checks that Steam Dump Valves are closed.	
	BOP	Determines 1A SG PORV is open. Takes manual control and closes 1A SG PORV.	<i>PORV is open due to a failed pressure transmitter which the operator should also diagnose</i>
	SRO	Determines Tech Specs 3.7.1.6 (action a) and 3.3.5.1 (action 2a) apply. Both require restoring SG PORV 1A to operable status within 7 days.	<i>Event 5 will occur here after T.S. are consulted. If Unit Supv. doesn't consult TS at this time, evaluate them after the scenario and move onto Event 5.</i>
	BOP	Checks Main Steam Safety Valves closed.	<i>This step and following steps may or may not be performed depending on when the crew becomes aware of Event 4.</i>

OPERATOR ACTIONS

Op-Test No.: 1 NRC Backup Scenario Event No.: 4			
Event Description: Steam Generator 1A PORV Pressure Transmitter Fails High			
Time	Position	Applicant's Actions or Behavior	Notes
	SRO/BOP	Checks Deaerator pressure normal: <ul style="list-style-type: none"> • Pressure < 235 psig • Steam supply valves are modulating properly • Relief valves are seated. 	
	SRO/BOP	Checks Moisture Separator Reheater (MSR) steam conditions normal: <ul style="list-style-type: none"> • Steamflows normal • MSR Reliefs seated 	<ul style="list-style-type: none"> - <i>by computer pts.</i> - <i>by Plant Operator observation</i>

OPERATOR ACTIONS (Cont')

Op-Test No.: 1 NRC Backup Scenario Event No.: 5 Event Description: RCP 1C #1 seal failure (ramp over 3 minutes)			
Time	Position	Applicant's Actions or Behavior	Notes
	ALL	Acknowledge and respond to RCP 1C NO 1 SEAL LKF FLOW HI/LO Annunciator on CP004	<i>This failure will initially give a leakoff value of approximately 5.5 gpm, then after 7 minutes, the leakoff will go > 6 gpm requiring a Reactor Trip</i>
	RO	Determines RCP 'C' seal leakoff flow is < 6 gpm. Checks specified seal parameters.	<i>Because the leakoff flow increases fairly rapidly and comes close to 6 gpm, the crew may decide to immediately trip the Reactor.</i>
	SRO (continuous)	Enters 0POP04-RC-0002, Reactor Coolant Pump Off Normal, for indications of abnormal RCP #1 seal indication.	
	SRO/RO	Check various RCP and seal parameters to determine if an RCP trip and a Reactor Trip are warranted.	A cue must be given that RCP shaft and case vibrations are normal
	SRO/RO	Checks RCP motor Upper and Lower Thrust Brg. Temperatures are < 195 °F.	
	SRO/RO	Checks seal cooling and injection parameters: <ul style="list-style-type: none"> • seal injection flows > 6 gpm • seal injection temperature ≤ 135 °F • CCW Hx Outlet Temp ≤ 105 °F • CCW Thermal Barrier flow ≥ 30 gpm 	
	RO	Checks case vibration < 3 mils	A cue must be given that RCP shaft and case vibrations are normal
	RO	Checks shaft vibration < 15 mils	
		Checks seal injection flows 6-13 gpm	
		Checks seal injection temperature ≤ 135 °F	

OPERATOR ACTIONS (Cont')

Op-Test No.: 1 NRC Backup Scenario Event No.: 5 Event Description: RCP 1C #1 seal failure (ramp over 3 minutes) (cont'd)			
Time	Position	Applicant's Actions or Behavior	Notes
	SRO	Evaluates seal leakoff flow per Addendum 2	
	RO	Identifies RCP 1C trip criteria on high #1 seal leak off flow (>6gpm) or low seal DP and trips the Reactor and RCP 1C.	<i>WHEN seal leakoff increases after 7 minutes.</i>
	SRO	Directs a Reactor Trip and trip of RCP 1C	
	RO	CLOSES RCP 1C #1 seal leakoff isolation (FV-3156) between 3 to 5 minutes after stopping RCP 1C.	<i>This action is from the CIP of 0POP04-RC-0002, Reactor Coolant Pump Off Normal. This action may not be performed since the crews are in the EOP's and the seal leakoff lines will be isolated by Phase 'A' Isolation at a later time.</i>
	SRO (continuous)	Enters 0POP05-EO-0000, Reactor Trip or Safety Injection. Directs crew to perform immediate actions	
	RO/BOP	Completes immediate actions of EO00, Reactor Trip/SI: <ul style="list-style-type: none"> • Reactor tripped • Turbine tripped • AC ESF Busses energized • SI actuated or required 	
	SRO	Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed.	
	SRO	Transitions to 0POP05-EO-ES01, Reactor Trip Response. Directs crew to monitor Critical Safety Functions	

OPERATOR ACTIONS (Cont')

Op-Test No.: 1 NRC Backup Scenario Event No.: 5 Event Description: RCP 1C #1 seal failure (ramp over 4 minutes) (cont'd)			
Time	Position	Applicant's Actions or Behavior	Notes
	ALL	Monitor RCS for cooldown; take appropriate action to stabilize RCS temperature if necessary.	
	SRO/BOP	Ensure FW Isolation and SGFPT's tripped	<i>Tripping the SGFPT's will cause the Startup Feedpump to start.</i>
	SRO/BOP	Ensure Main or Aux Feed available to SG's	
	SRO/RO	Verifies all Control Rods are fully inserted (rod bottom lights are lit).	
	SRO/RO	Checks if any ESF DG's are running	<i>#13 DG will be running at this time</i>
	SRO/RO	Checks Pressurizer Level is >17% and the following in service: <ul style="list-style-type: none"> • charging • seal injection • letdown • Pzr level trending to 25% 	<i>Event # 6 will occur here</i>
	SRO/RO	Check Pressurizer Pressure control	
	RO/BOP	Acknowledges and reports a radiation monitoring alarm in containment.	<i>Due to initiation of SBLOCA (Event # 6)</i>
	ALL	Determines an RCS leak/break exists and plant conditions are deteriorating: <ul style="list-style-type: none"> • RCS pressure • Pressurizer Level • VCT Level 	

OPERATOR ACTIONS (Cont')

Op-Test No.: # 1 NRC Backup Scenario Event No.: 6 and 7 Event Description: SBLOCA Failure of ESF DG #13 to load			
Time	Position	Required Operator Actions	Notes
	SRO	Ensures Safety Injection is actuated	<i>Crew may or may not have time to manually actuate Safety Injection.</i>
	SRO	Transitions back to 0POP05-EO-0000, Reactor Trip or Safety Injection.	
	SRO	Re-verifies immediate actions have been completed: <ul style="list-style-type: none"> • Reactor Tripped • Turbine Tripped • Power to ESF Buses • Safety Injection actuated 	<i>The crew may immediately re-start 'C' ECW pump to provide cooling to DG # 13.</i>
	ALL (continuous) C	Trips RCPs if the following conditions exist: <ul style="list-style-type: none"> • RCS pressure < 1430 psig • ≥ 1 HHSI Pump running 	<i>-With equipment originally OOS and failure of ESF DG #13 to load automatically, only 'A' Train HHSI Pump will be operating.</i> <i>- The RCP trip conditions will not occur immediately, but will occur during the scenario.</i>
	SRO/BOP	Directs BOP to perform Addendum 5, Verification of SI Equipment Operation	<i>Event # 7 should be discovered at this time. The operator performing Addendum 5 will have to manually start Train 'C' ESF Equipment.</i>
	RO	Checks for Containment Spray initiation and Containment Isolation Phase 'B'	<i>These occur if Containment pressure exceeds 9.5 psig, but pressure will not reach this value during the scenario.</i>

OPERATOR ACTIONS (Cont')

Op-Test No.: # 1 NRC Backup Scenario Event No.: 6 and 7 Event Description: SBLOCA Failure of ESF DG #13 to load			
Time	Position	Required Operator Actions	Notes
	SRO/RO	Check plant status: <ul style="list-style-type: none"> • RCP Seal cooling • RCS cooldown • Pzr valve status • RCP trip criteria • Selected Containment Isol. Valves 	
	ALL	Diagnose an RCS break has occurred	
	SRO	Transitions to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant. Informs crew to monitor Critical Safety Functions (CSF's)	<i>Until Addendum 5 of the Reactor Trip procedure is complete, CSF's can only be monitored, not acted upon.</i>
	ALL	Determine if RCPs should be stopped	<i>May be stopped by this time</i>
	RO/BOP C	De-pressurize intact SGs to 1000 psig: <ul style="list-style-type: none"> • Block Low Steamline Pressure SI • De-pressurize SG's to 980-994 psig with Steam Dumps. • Set Steam Dumps to automatically control pressure 980-994 psig. • Adjust SG PORV setpoints to 990-1000 psig. • Place SG PORV controllers in AUTO. 	<i>- May not adjust the setpoint since the valve is failed open.</i> <i>-except 'A' SG PORV due to failed pressure xmtr.</i>
	SRO/BOP	Check SG pressure boundaries are intact	<i>Terminate Scenario</i>

CRITICAL TASK SUMMARY

POSITION	EXPECTED RESPONSE	ACCEPTANCE CRITERIA	SAT/ UNSAT
ALL	<ul style="list-style-type: none"> • Trips RCPs during a SBLOCA under prescribed procedural conditions 	Trip RCPs if the following conditions exist: <ul style="list-style-type: none"> • RCS pressure < 1430 psig • ≥ 1 HHSI Pump running 	
RO/BOP C	De-pressurize intact SGs to 1000 psig: <ul style="list-style-type: none"> • Block Low Steamline Pressure SI • De-pressurize SG's to 980-994 psig with Steam Dumps. • Set Steam Dumps to automatically control pressure 980-994 psig. • Adjust SG PORV setpoints to 990-1000 psig. • Place SG PORV controllers in AUTO. 	De-pressurize SG's to ≤ 1000 psig within 45 minutes of a SBLOCA	

TURNOVER INFORMATION

- Reactor Power is 73%
- Cycle Burnup is 150 MWD/MTU
- RCS Boron Concentration is 1469 ppm
- Power reduction in progress for turbine blade inspection. Currently in 0POP03-ZG-0006, Plant Shutdown from 100% to Hot Standby, step 5.12. Continue the plant shutdown at a rate of 0.5% per minute.
- The following equipment is OOS:
 - FWBP #11
 - 'B' HHSI Pump (motor maintenance)
 - 'B' LHSI Pump (electrical PM's)
 - 'B' CCW Pump (breaker maintenance)
- Total Batch Integrator set at 10 gallons, getting 11. Xenon is building in.
- Boric Acid Tanks 'A' and 'B' are at 7700 ppm.
- No liquid waste discharges are in progress or planned.
- No personnel are in containment.
- FHB Truck Bay doors are closed
- No ESF DG FOST's are on recirc.